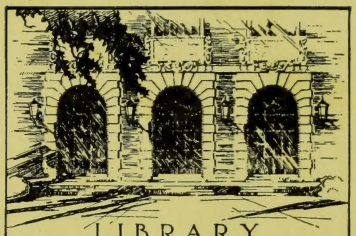

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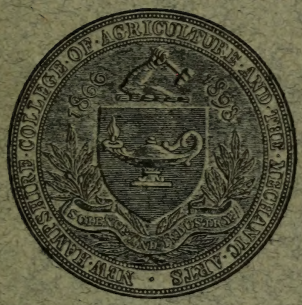
VOLUME V NUMBER 5

The New Hampshire College Catalogue

1914-1915

FORTY-SIXTH YEAR



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Durham, New Hampshire
Published by the College

The New Hampshire College of Agriculture and the Mechanic Arts Bulletin

Durham, New Hampshire

APRIL, 1914

Entered as second class matter, August 5, 1907, at the Post Office at Durham, N. H., under the Act of Congress of July 16, 1894

CALENDAR

1914

JANUARY.

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AUGUST.

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NOVEMBER.

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COLLEGE CALENDAR.

1914.

Entrance examinations, beginning at 8.30 a. m.	*Tuesday, September 8.*
Registration day. First semester begins	*Wednesday, September 16.*
Address to student body	*Thursday, September 17.*
Address to freshmen by the president	*Friday, September 18.*
Stated meeting of trustees	*Wednesday, October 14.*
College closes at 4 p. m.	*Tuesday, December 22.*

1915.

College opens at 8 a. m.	*Tuesday, January 5.*
Stated meeting of trustees	*Wednesday, January 13.*
Mid-year examinations	*Thursday, January 28, through Tuesday, February 2.*
Registration day. Second semester begins	*Thursday, February 11.*
Stated meeting of trustees	*Wednesday, April 14.*
College closes at 4 p. m.	*Tuesday of Fast Day week.*
College opens at 8 a. m.	*Tuesday following Fast Day.*
Graduation of two-year class . . .	*Wednesday, May 19.*
Senior examinations completed at 4 p. m.	*Tuesday, June 8.*
Final examinations	*Wednesday, June 9, through Monday, June 14.*
Baccalaureate sermon at 10.45 a. m. .	*Sunday, June 13.*
Prize drill, in the armory at 8 p. m. .	*Monday, June 14.*
Class day. Stated meeting of trustees	*Tuesday, June 15.*
Commencement day	*Wednesday, June 16.*
*Entrance examinations, beginning at 8.30 a. m.	*Tuesday, June 22.*

*Candidates taking the June entrance examinations have an opportunity by so doing to compete for the Valentine Smith scholarship. See page 10.

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His Excellency, Gov. SAMUEL D. FELKER, A.M., LL.D., *ex-officio.*

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Aug. 30, 1902, to Aug. 30, 1914.

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Jan. 16, 1906, to July 1, 1916.

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Dec. 2, 1908, to Dec. 2, 1914.

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May 13, 1909, to Oct. 9, 1915.

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Sept. 1, 1911, to Sept. 1, 1914.

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July 29, 1912, to July 29, 1915.

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Jan. 10, 1914, to June 14, 1916.

Hon. WILLIS McDUFFEE, A.B. Rochester.
Jan. 10, 1914, to June 14, 1916.

Hon. JAMES A. TUFTS, A.B., Exeter.
Jan. 10, 1914, to June 14, 1916.

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RENA M. LOWE, *Stenographer.*

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WALTER C. O'KANE, A.M., *Professor of Economic Entomology.*
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*FRANK APP, B.S., *Assistant Professor of Agronomy.*

*On leave of absence.

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ROBERT V. MITCHELL, B.S., *Assistant Professor of Animal Husbandry in charge of Poultry.*

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SIDNEY H. KATZ, B.S., C.E., *Instructor in Chemistry.*
DAVID LUMSDEN, *Instructor in Floriculture and Landscape Gardening.*
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JAMES H. PHILBRICK, *Instructor in Woodworking and Foundry Work.*
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CHARLES H. BATCHELDER, B.S., *Assistant in Zoölogy.*
MARION E. TEMPLETON, B.A., *Assistant in Botany.*

NEW HAMPSHIRE AGRICULTURAL EXPERIMENT STATION.

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Hon. W. H. Caldwell, B.S.,	Peterborough
Hon. J. W. Prentiss,	Alstead
Hon. J. A. Tufts, A.B.,	Exeter
Pres. E. T. Fairchild, A.M., LL.D., *ex-officio*	Durham

THE STATION STAFF.

EDWARD T. FAIRCHILD, A.M., LL.D., *President, ex-officio.*
JOHN C. KENDALL, B.S., *Director.*
FREDERICK W. TAYLOR, B.Sc. (Agr.), *Agronomist.*

B. E. CURRY, A.B., *Chemist.*
FRED RASMUSSEN, B.S.A., *Dairyman.*
W. C. O'KANE, A.M., *Entomologist.*
J. H. FOSTER, B.S., M.F., *Forester.*
J. H. GOURLEY, B.S., *Horticulturist.*
O. R. BUTLER, PH.D., *Botanist.*
J. M. JONES, B.S. (Agr.), A.M., *Animal Husbandman.*
C. W. STONE, A.M., *Farmer and Vice-Director.*
W. H. WOLFF, M.S., *Assistant Horticulturist.*
DAVID LUMSDEN, *Assistant in Floriculture.*
T. O. SMITH, A.B., *Assistant Chemist.*
CAROLINE A. BLACK, PH.D., *Assistant Botanist.*
*FRANK APP, B.S., *Assistant Agronomist.*
W. E. STOKES, M.S., *Assistant Agronomist.*
C. H. HADLEY, JR., B.S., *Assistant Entomologist.*

Assistants to the Staff.

MABEL HODGKINS, A.B., B.S., *Librarian.*
MIRIAM L. HOBBS, *Purchasing Agent.*
BEATRICE M. RICHMOND, *Bookkeeper.*
LAURA B. BICKFORD, *Stenographer.*
ELIZABETH E. MEHAFFEY, *Assistant Librarian and Mailing Clerk.*
JANET E. McDONALD, *Stenographer.*

*On leave of absence.

HISTORICAL SKETCH.

The New Hampshire College of Agriculture and the Mechanic Arts was created by an act of the New Hampshire legislature in 1866 and was established at Hanover as a state institution, in connection with Dartmouth College. In its foundation the state legislature had accepted the conditions of an act of the federal congress of July 2, 1862, entitled "An act donating public lands to the several states and territories which may provide colleges for the benefit of agriculture and the mechanic arts." The state had accepted the land grant three years earlier, July 9, 1863.

In 1893 the college was moved from Hanover to Durham. This action followed the death of Benjamin Thompson of Durham, a farmer, who died January 30, 1890, and left his entire estate, with a few minor reservations, to the college. The legislature accepted this bequest March 5, 1891, and appropriated the necessary money for the first buildings.

Mr. Thompson wrote in his will, "My object being mainly to promote the improvement of agriculture, though willing that the college to be established should also provide for the mechanic arts, it is my will that the institution to be established by the state . . . shall be called and designated . . . The New Hampshire College of Agriculture and the Mechanic Arts, if that shall be the wish of the state; and that in addition to the instruction to be given therein, as provided by my said will, there shall be taught only such other arts or sciences as may be necessary to enable said state to fully avail itself of said donation of lands by the government in good faith, which two branches of instruction shall be the leading objects of said institution or college."

A few days before the state accepted this bequest of Mr. Thompson the legislature further provided for the college by

accepting the provisions of an act of congress known as the Morrill Bill. This legislation made available federal appropriations "for instruction in agriculture, the mechanic arts, the English language, and the various branches of mathematical, physical, natural and economic science, with special reference to their applications in the industries of life, and to the facilities for such instruction."

Although the college was able to make use of the Thompson land as early as 1893, it was not until 1910 that the income from this endowment of almost $800,000 became available. At present the college has an annual income from the Thompson funds of nearly $32,000, the moneys which are available as the result of the acts of congress referred to, and the biennial appropriations of the state legislature.

The college administration is in charge of a board of thirteen trustees. The governor of the state and the president of the college are *ex-officio* members; the college alumni elect two, and the others are appointed by the governor with the advice and consent of the council.

A branch of the college, known as the New Hampshire Agricultural Experiment Station, was established by the state, August 4, 1887, under an act of congress of March of that year. Its purpose is to acquire agricultural knowledge and to bring its information to the people of the state. The station is actively engaged in this work not only in Durham but throughout the commonwealth. Members of the agricultural faculty of the college serve on the station staff and there are special agents who are engaged exclusively in field work.

When the college came to Durham it had but twenty-seven students and a faculty of but thirteen members. At present its students number approximately four hundred and its faculty fifty. Its growth, at first slow, has been constant always, and in the last five years the college has doubled the number of its students and tremendously increased its equipment.

GENERAL INFORMATION.

Situation.—Durham, the home of the college, is on the Portland division of the Boston and Maine railroad, sixty-two miles from Boston and five miles from Dover.

Courses.—The college is a part of the public school system of the state, continuing the work of the high school, and its courses are open to both men and women. In accord with the origin and function of the college its courses are essentially practical, leading directly to the student's preparation for a successful livelihood.

I. Agriculture.

a. Four-Year Courses.
  1. Animal Husbandry and Dairying.
  2. Forestry.
  3. Horticulture.
  4. General Agriculture and Agricultural Teaching.

b. Two-Year Course in Agriculture.
c. Five-Week Course in Dairying.
d. Four-Week Course in Fruit Growing.
e. Farmers' One-Week Course.

II. Arts and Science.

a. General Arts and Science.
b. Home Economics.
c. Mechanic Arts for Teachers.

III. Engineering.

a. Chemical Engineering.
b. Electrical Engineering.
c. Mechanical Engineering.

Tuition and Fees.—Tuition is $60 a year; fees, which include all charges commonly considered extras, except those for breakage and damage to college property, are $20 a year. They are payable in advance in two equal instal-

ments, one on the first day of each semester. By vote of the trustees, all members of the senior class are assessed a graduation fee of $5.00.

Scholarships.—Scholarships are awarded each semester at the discretion of the faculty to resident students of New Hampshire. They may be forfeited at any time for misconduct and will not be awarded, except by special permission of the president, to students in the four-year courses who have failed to secure an average grade of sixty or over in the previous semester. They are given for the purpose of aiding deserving students and will be withdrawn from those who use intoxicating liquor or tobacco.

Conant Scholarships.—There are twenty-seven Conant scholarships, each paying tuition, $60; fees, $20; cash $20,—total, $100. These are assigned under the following conditions:

They are to be given to young men taking agricultural courses.

Each town in Cheshire County is entitled to one scholarship, and Jaffrey is entitled to two.

They will be reserved for their respective towns until August 1 of each year. Those not taken by students from Cheshire County, and those in excess of the number of towns, will then be assigned to agricultural students from other parts of the state, and may be divided at the discretion of the president.

Senatorial Scholarships.—There are twenty-four senatorial scholarships, one for each senatorial district. Each scholarship is to pay tuition of $60. Senatorial scholarships not filled may be assigned to students from other localities at the discretion of the faculty; they are open to students in all courses.

Grange Scholarships.—Each subordinate and Pomona grange in New Hampshire has the privilege of appointing one student annually to a free scholarship in any of the four-year or two-year courses in the college. Each scholarship

is to pay the tuition of $60. The method of appointment is entirely at the option of the grange; it may be by election, competitive examination, or otherwise. Holders of these scholarships need not be members of the grange, but must be resident within the state.

Valentine Smith Scholarships.—Through the generosity of the late Mr. Hamilton Smith of Durham, the sum of $10,000 has been given to the college to establish the Valentine Smith scholarships.

"The income thus accruing to the college shall be given to the graduate of an approved high school or academy who shall, upon examination, be judged to have the most thorough preparation for admission to the college; *provided*,

"That if the student receiving this scholarship shall at any time prove unworthy, in the judgment of the faculty, by reason of defective scholarship or character, he shall forfeit his claim to the student most deserving; and

"That if the student receiving this scholarship shall cease to be a member of the college, the income from this fund, for the unexpired term, shall be awarded to the student most deserving in character and scholarship."

By vote of the faculty, these scholarships will be forfeited by failure to obtain an average grade of 75 per cent. for any semester. These scholarships yield $400 annually or one hundred dollars to each holder. Competitive examinations for this scholarship will be held at the college in June and at no other time. Applicants must present themselves at the registrar's office at 8.00 a. m., June 23, 1914. They are not restricted to residents of New Hampshire.

Prizes.—*Bailey Prize.*—Dr. C. H. Bailey of Gardner, Mass., and E. A. Bailey, B.S., of Keene, N. H., offer a prize of ten dollars for proficiency in chemistry.

Erskine Mason Memorial Prize.—Mrs. Erskine Mason of Stamford, Conn., has invested one hundred dollars as a memorial to her son, a member of the class of 1893, the income of which is to be given, for the present, to that member

of the senior class who has made the greatest improvement during his course.

Chase-Davis Memorial Medals.—In the spring of 1909 the Glee Club voted to present a gold and a silver medal yearly to the college in memory of Carl Chase, '09, of Webster, an enthusiastic member of the New Hampshire football team and the Glee Club, and of John Worthen Davis, '11, of Concord, who were drowned in Great Bay, December 7, 1908.

According to the terms of this gift, the gold medal is to be awarded to the senior who has won an "N. H." and stands highest in his studies, and the silver medal is to be awarded to the senior who has won an "N. H." and stands second in his studies. These medals are for excellence in athletic competition primarily, and the number of times a man wins an "N. H." during his college career shall be of importance in making the award.

Individual Drill Prizes.—First—A gold medal given by the college. *Second*—A silver medal given by the college. *Third*—A bronze medal given by the college.

Junior Officer's Prize.—A saber, with belt complete, given to the junior cadet officer who excels in executing certain required movements or evolutions with a company.

Alumni Trustee Prizes.—For excellence in debate. Offered by H. L. Boutwell, of Malden, Mass., and E. H. Wason, of Nashua, N. H., alumni trustees. The contest will be held commencement week, June, 1914, between class teams of three each. The prizes are to be awarded as follows: Two first prizes of $25 each for individual excellence; two second prizes of $15 each for individual excellence; two prizes of $10 each to the winning teams.

College Aid to Students.—Students obtain considerable financial aid by janitorships, by table work at boarding clubs and by work on the farm and in the greenhouse. They also find employment with the power and service department of the college and with the experiment station.

Students may purchase at cost all books, drawing instruments, materials, etc., at the college book-store in Thompson Hall.

Estimate of Freshman Expenses.—

Tuition	Free		$60.00
Text-books	$12.00	to	20.00
Military uniform for new students	20.00	to	20.00
Drawing instruments and materials	12.00	to	25.00
Fees	20.00	to	20.00
Room rent, including heat and light	32.00	to	72.00
Board, $3.40 to $4.00 per week, for thirty-six weeks	122.40	to	144.00
Total	$218.40		$361.00

Expenses of two-year agricultural students are about $15 less than above schedule.

This total does not include incidentals (such as traveling expenses, laundry, etc.).

Room rent is estimated on the supposition that two students occupy the same room or suite of rooms.

The college has no rooms for men students. Rooms may be obtained either furnished or unfurnished, in buildings under private control, and are for the most part provided with heating apparatus, electric lights and baths.

Women students, unless living at home, are required to room in dormitories provided by the college.

Table board is $4 to $4.25 per week and prices for rooms range from $1.25 to $2 per week for thirty-six weeks. Rooms will be assigned to old students in order of their seniority and to new students according to their date of application. Applications for rooms should be made to the dean.

Other expenses are the same as for men students except for military uniform.

Registration.—Undergraduate students are required to register before 4 p. m. on the first day of each semester.

Every former student registered after the first day of any semester shall be charged for such registration a fine of one dollar for the first day and fifty cents additional for each succeeding day, to be remitted only by the president upon presentation of a substantial excuse for the delay.

Rules of Conduct.—The dean of the college has general supervision of registration, attendance, election of studies and removal of entrance conditions. The regulations of the college concerning such matters are given in detail in the "Student Rules," copies of which may be obtained of the registrar.

Warnings and Reports of Standing.—Warnings of unsatisfactory work are sent to parents and guardians near the middle of each semester.

Reports of standing are sent to parents and guardians at the close of each semester.

Attendance at Convocation and Military Drill.—Attendance at convocation is required of all students, and attendance at military drill is required of all male students, unless members of the senior class or unless excused on account of physical disability. Certificates of disability must be obtained of the physician designated by the college, and must be renewed annually.

Military Department.—This department is in charge of an officer of the United States regular army, detailed by the war department, as professor of military science and tactics. Military instruction, which is required by law, is both theoretical and practical, the former having special reference to the duties of the line.

The organization is a battalion of four companies with a band, officered by cadets selected for character, soldierly bearing and efficiency. The federal government has furnished U. S. magazine rifles, model 1898, and equipment. Attention is paid to rifle practice, the government supplying

ample ammunition and target materials, and the college a good range within four minutes' walk of the college buildings, with firing points at 200 and 300 yards. The rolling country in the vicinity of the college furnishes the best opportunities for extended order drill and field exercises, the athletic field for close order drills, and the gymnasium gives ample room for indoor work.

The cadets wear when on duty, and may at other times, a gray cloth uniform as prescribed by standing orders in the War Department. White collars, gloves and waist belts of a standard pattern must be purchased with the uniform and the students have the option of purchasing a high black calf shoe for uniform wear, at a special low price. The cost of a uniform for the new student is $19.95, not including shoes, and its use may make possible a saving in civilian clothing.

Service in this department is optional for members of the senior class; all other students, excepting those excused by competent authority, are required to attend both drills and recitations. Seniors who elect drill and are appointed cadet officers have their college fees refunded at the end of the semester if their work has been satisfactory. Seniors who elect drill and are not appointed cadet officers are not required to be armed or to drill in the ranks, but will attend all drills and perform such duties as may be required of them.

Upon the graduation of each class the names of those students who have shown special aptitude for military service are reported to the adjutant-general of the army and to the adjutant-general of the state, and they receive a special certificate for military proficiency.

ADMISSION TO FOUR-YEAR COURSES.

METHODS OF ADMISSION.

Admission to New Hampshire College may be obtained by examination, by certificate or by a combination of the two methods. Every candidate must present satisfactory testimonials of good character.

Candidates for advanced standing are admitted on the basis of the work completed at the institutions from which they come.

UNIT REQUIREMENTS.

Candidates for admission to the freshman class must offer a total of fifteen units.

Each unit represents one study of four or five recitations a week for one year.

Of the fifteen units the following are required:

	Agricultural Division.	Arts and Science Division.	Engineering Division.
Group A English,	3	3	3
Group B Foreign Languages (Latin, Greek, French, German),	2	2	2
Group C Mathematics,	2	2	3
Group D Social Science, including History,	1	1	1
Group E Natural Science,	1	1	1
	9	9	10
Group F *Vocational,			

*The vocational group includes agriculture, domestic science, manual training, drawing, bookkeeping, stenography, and typewriting, provided such preparation is of a quality which meets with the approval of the state superintendent of public instruction.

ELECTIVE SUBJECTS.

Candidates for the Agricultural and Arts and Science Divisions must, *upon entrance to college*, present two other units chosen from groups A to E, one or both to be so chosen as to make up a second major of three units.

Candidates for the Engineering Division must present one other unit chosen from groups A to E.

The four remaining units may be chosen from any of the groups A to F. Entrance examinations, however, will be confined to subjects included in groups A, B, C, D, and E.

A candidate for admission to the Arts and Science Division may substitute for the two units of a foreign language one additional unit in social science and one in natural science.

A candidate for admission to the Arts and Science Division who presents two units of a foreign language may substitute for the two units of mathematics one additional unit in social science and one additional unit in natural science.

It is assumed that two hours of manual training or laboratory work are equivalent to one hour of classroom work.

REQUIREMENTS IN DETAIL.

As a suggestion of the preparation required in the different subjects offered for entrance the following detailed statement is made. It should be understood, however, that the completion in any subject of the work required during one year by the superintendent of public instruction for New Hampshire of an approved high school fully satisfies the requirements for the credit of one unit in that subject.

GROUP A. ENGLISH.

Preparation in English has two main objects: (1) command of correct and clear English, spoken and written; (2) ability to read with accuracy, intelligence and appreciation.

The first object requires instruction in grammar and composition. The second object is sought by means of two lists of books, headed respectively Reading and Study, from which may be framed a progressive course in literature covering four years. A candidate will not be accepted in English whose work is notably deficient in point of spelling, punctuation, phraseology or division into paragraph.

Reading.—The aim of this course is to foster in the student the habit of intelligent reading, and to develop a taste for good literature, by giving him a first-hand knowledge of some of its best specimens. He should read the books carefully, but his attention should not be so fixed upon details that he fails to appreciate the main purpose and charm of that he reads.

Study.—This part of the requirement is intended as a natural and logical continuation of the student's earlier reading, with greater stress laid upon form and style, the exact meaning of words and phrases, and the understanding of allusions. For this close reading are provided a play, a group of poems, an oration and essay.

The first part of the examination will be upon the books prescribed for reading, and the form of the examination will usually be the writing of short paragraphs on several topics which the candidate may choose out of a considerable number. It may include also questions upon grammar and the simpler principles of rhetoric.

The second part of the examination will include composition and those books comprised in the list headed Study. The test in composition will consist of one or more essays, developing a theme through several paragraphs; the subjects will be drawn from the books prescribed for study, from the candidate's other studies, and from his personal knowledge and experiences quite apart from reading.

Requirements, 1914.—In 1914 the examination will be based on the recommendations of the Conference on Uniform Entrance Requirements in English, which met February 22, 1909.

(*a*) *Reading.*—The following list of books is required for reading in 1914. Two selections are to be taken from each group. Each selection is followed by a semicolon or a period.

Group I. The Old Testament, comprising at least the chief narrative episodes in Genesis, Exodus, Joshua, Judges, Samuel, Kings, and Daniel, together with the books of Ruth and Esther; the Odyssey, with the omission, if desired, of Books, I, II, III, IV, V, XV, XVI, XVII; the Iliad, with the omission, if desired, of Books XI, XIII, XIV, XV, XVII, XXI; Virgil's Aeneid. The Odyssey, Iliad and Aeneid should be read in English translations of recognized literary excellence.

For any unit of this group a unit from any other group may be substituted.

Group II. Shakespeare's Merchant of Venice; Midsummer Night's Dream; As You Like It; Twelfth Night; Henry the Fifth; Julius Caesar.

Group III. Defoe's Robinson Crusoe, Part I; Goldsmith's Vicar of Wakefield; Scott's Ivanhoe or Quentin Durward; Hawthorne's House of the Seven Gables; Dickens's David Copperfield or Tale of Two Cities; Thackeray's Henry Esmond; Mrs. Gaskell's Cranford; George Eliot's Silas Marner; Stevenson's Treasure Island.

Group IV. Bunyan's Pilgrim's Progress, Part I; The Sir Roger de Coverley Papers in The Spectator; Franklin's Autobiography (condensed); Irving's Sketch Book; Macaulay's Essays on Lord Clive and Warren Hastings; Thackeray's English Humourists; Selections from Lincoln, including at least the two Inaugurals, the Speeches in Independence Hall and at Gettysburg, the Last Public Address, and the Letter to Horace Greeley, along with a brief memoir or estimate; Parkman's Oregon Trail; either Thoreau's Walden, or Huxley's Autobiography and selections from Lay Sermons, including the addresses on Improving Natural Knowledge, a Liberal Education, and A Piece of Chalk; Stevenson's Inland Voyage and Travels with a Donkey.

Group V. Palgrave's Golden Treasury (First Series),

Books II and III, with especial attention to Dryden, Collins, Gray, Cowper, and Burns; Gray's Elegy in a Country Churchyard and Goldsmith's Deserted Village; Coleridge's Ancient Mariner and Lowell's Vision of Sir Launfal; Scott's Lady of the Lake; Byron's Childe Harold, Canto IV, and Prisoner of Chillon; Palgrave's Golden Treasury (First Series), Book IV, with especial attention to Wordsworth, Keats, and Shelley; Poe's Raven, Longfellow's Courtship of Miles Standish, and Whittier's Snow-Bound; Macaulay's Lays of Ancient Rome and Arnold's Sohrab and Rustum; Tennyson's Gareth and Lynette, Lancelot and Elaine, and The Passing of Arthur; Browning's Cavalier Tunes, The Lost Leader, How They Brought the Good News from Ghent to Aix, Home Thoughts from Abroad, Home Thoughts from the Sea, Incident of the French Camp, Hervé Riel, Pheidippides, My Last Duchess, Up at a Villa—Down in the City.

(*b*) *Study.*—Shakespeare's Macbeth; Milton's L'Allegro, Il Penseroso, and Comus; either Burke's Speech on Conciliation with America or both Washington's Farewell Address and Webster's First Bunker Hill Oration; either Macaulay's Life of Johnson or Carlyle's Essay on Burns.

Requirements, 1915–1919.—(*a*). *Reading.* The following list of books is required for reading in 1915, 1916, 1917, 1918 and 1919.

With a view to large freedom of choice, the books are arranged in the following groups, from each of which at least two selections are to be made, except as otherwise provided under Group I:

Group I. Classics in Translation. Same as in 1913–1914. For any selection from this group a selection from any other group may be substituted.

Group II. Shakespeare.—Midsummer Night's Dream; Merchant of Venice; As You Like It; Twelfth Night; The Tempest; Romeo and Juliet; King John; Richard II;

Richard III; Henry V; Coriolanus; Julius Caesar*; Macbeth*; Hamlet*.

Group III. Prose Fiction.—Malory's Morte d'Arthur (about 100 pages); Bunyan's Pilgrim's Progress, Part I; Swift's Gulliver's Travels (voyages to Lilliput and to Brobdingnag); DeFoe's Robinson Crusoe, Part I; Goldsmith's Vicar of Wakefield; Frances Burney's Evelina; Scott's Novels (any one); Jane Austen's Novels (any one); Maria Edgeworth's Castle Rackrent, or The Absentee; Dickens's Novels (any one); Thackeray's Novels (any one); George Eliot's Novels (any one); Mrs. Gaskell's Cranford; Kingsley's Westward Ho! or Hereward, the Wake; Reade's The Cloister and The Hearth; Blackmore's Lorna Doone; Hughes's Tom Brown's Schooldays; Stevenson's Treasure Island, or Kidnapped, or Master of Ballantrae; Cooper's Novels (any one); Poe's Selected Tales; Hawthorne's The House of the Seven Gables, or Twice-Told Tales, or Mosses from an Old Manse; a collection of short stories by various standard writers.

Group IV. Essays, Biography, etc.—Addison and Steele's The Sir Roger de Coverley Papers, or Selections from the Tatler and Spectator (about 200 pages); Boswell's Selections from the Life of Johnson (about 200 pages); Franklin's Autobiography; Irving's Sketch Book (about 200 pages), or Life of Goldsmith; Southey's Life of Nelson; Lamb's Essays of Elia (about 100 pages); Lockhart's Life of Scott (about 200 pages); Thackeray's Lectures on Swift, Addison, and Steele in the English Humourists; Macaulay's Lord Clive, Warren Hastings, Milton, Addison, Goldsmith, Frederic the Great, Madame d'Arblay (any one); Trevelyan's Life of Macaulay (about 200 pages); Ruskin's Sesame and Lilies, or Selections (about 150 pages); Dana's Two Years before the Mast; Selections from Lincoln, including at least the two Inaugurals, the Speeches in Independence Hall and at Gettysburg, the Last Public Address, and the Letter to Horace Greeley, together with a brief memoir or

* If not chosen for study under (*b*).

estimate; Parkman's The Oregon Trail; Thoreau's Walden; Lowell's Selected Essays (about 150 pages); Holmes's The Autocrat of the Breakfast Table; Stevenson's An Inland Voyage, and Travels with a Donkey; Huxley's Autobiography, and selections from Lay Sermons, including the addresses on Improving Natural Knowledge, A Liberal Education, and A Piece of Chalk; a collection of Essays by Bacon, Lamb, DeQuincey, Hazlitt, Emerson, and later writers; a collection of letters by various standard writers.

Group V. Poetry.—Palgrave's Golden Treasury (First Series), Books II and III, with special attention to Dryden, Collins, Gray, Cowper, and Burns; Palgrave's Golden Treasury (First Series), Book IV, with special attention to Wordsworth, Keats, and Shelley (if not chosen for study under *b*); Goldsmith's The Traveller, and The Deserted Village; Pope's The Rape of the Lock; a collection of English and Scottish ballads, as, for example, some Robin Hood ballads, The Battle of Otterburn, King Estmere, Young Beichan, Bewick and Grahame, Sir Patrick Spens, and a selection from later ballads; Coleridge's The Ancient Mariner, Christabel and Kubla Khan; Byron's Childe Harold, Canto III or IV, and The Prisoner of Chillon; Scott's The Lady of the Lake, or Marmion; Macaulay's The Lays of Ancient Rome, The Battle of Naseby, The Armada, Ivry; Tennyson's The Princess, or Gareth and Lynette, Lancelot and Elaine, and The Passing of Arthur; Browning's Cavalier Tunes, The Lost Leader, How They Brought the Good News from Ghent to Aix, Home Thoughts from Abroad, Home Thoughts from the Sea, Incident of the French Camp, Hervé Riel, Pheidippides, My Last Duchess, Up at a Villa—Down in the City, The Italian in England, The Patriot, The Pied Piper, "De Gustibus"—, Instans Tyrannus; Arnold's Sohrab and Rustum, and The Forsaken Merman; Selections from American Poetry, with special attention to Poe, Lowell, Longfellow, and Whittier.

(*b*) *Study.*—The books provided for study are arranged in four groups, from each of which one selection is to be made.

Group I. Drama.—Shakespeare's Julius Caesar, Macbeth Hamlet.

Group II. Poetry.—Milton's L'Allegro, Il Penseroso, and either Comus or Lycidas; Tennyson's The Coming of Arthur, The Holy Grail, and The Passing of Arthur; the selections from Wordsworth, Keats and Shelley in Book IV of Palgrave's Golden Treasury (First Series).

Group III. Oratory.—Burke's Speech on Conciliation with America; Macaulay's Two Speeches on Copyright, and Lincoln's Speech at Cooper Union; Washington's Farewell Address, and Webster's First Bunker Hill Oration.

Group IV. Essays.—Carlyle's Essay on Burns, with a selection from Burns's Poems; Macaulay's Life of Johnson; Emerson's Essay on Manners.

GROUP B. FOREIGN LANGUAGES.

In the year 1914–1915, preparatory schools will be required to certify with regard to the oral and aural qualifications of their students.

1. **French.**—Two years are required for preparation in French. Work of the first year should include (1) careful drill in pronunciation, (2) drill upon the rudiments of grammar, (3) abundant translation of simple English prose into idiomatic French, (4) reading of from 100 to 175 pages of French prose, (5) writing French from dictation. Work of the second year should include (1) the reading of from 250 to 400 pages of easy modern prose, (2) constant practice in translating from English into French variations of the text read, (3) frequent paraphrases of the text read, (4) dictation. —2 units

2. **German.**—Two years are required for preparation in German. Work of the first year should include (1) careful drill in pronunciation, (2) drill upon the rudiments of grammar, such as the inflection of the articles, the common nouns, adjectives, pronouns, and strong and weak

verbs, upon the uses of the prepositions, the modal auxiliaries and the rules of syntax and word order, (3) writing from dictation, (4) the reading of from 75 to 100 pages of prose, (5) translation from English into German. Work of the second year should include (1) the reading of from 150 to 200 pages of prose, (2) constant practice in translating from English into German variations of the text read, (3) dictation, (4) continued drill upon the rudiments of grammar (5) frequent paraphrases of the text read. —2 units.

Students entering from approved schools may receive credit in their certificates for the following work in Greek or Latin:

1. **Greek, Elementary.** Books I and II of Xenophon's Anabasis, Books III and IV of the Anabasis or their equivalent in other Attic prose. Two years' work. —2 units.

2. **Latin, Elementary.**—Grammar and four books of Caesar. Two years' work. —2 units.

3. **Latin, Advanced.**—Virgil, six books. Cicero, six orations. —2 units.

GROUP C. MATHEMATICS.

1. **Algebra, to Quadratics.**—The four fundamental operations for rational algebraic expressions. Factoring, determination of highest common factor and least common multiple by factoring. Fractions including complex fractions, and ratio and proportion. Linear equations, both numerical and literal, containing one or more unknown quantities. Problems depending on linear equations. Radicals, including the extraction of the square root of polynomials and of numbers. Exponents, including the fractional and negative. —1 unit.

2. **Algebra, Quadratics and beyond.**—Quadratic equations, both numerical and literal. Problems depending on quadratic equations. The formulas for the nth term and

the sum of the terms of arithmetical and geometrical progressions, with applications. The binomial theorem for positive integral exponents.

Pupils should be taught the use of graphical methods and illustrations, particularly in connection with the solution of equations. —$\frac{1}{2}$ unit.

3. **Plane Geometry.**—The usual theorems and constructions of good text-books, including the general properties of plane rectilineal figures; the circle and measurement of angles; similar polygons; areas; regular polygons, and the measurement of the circle. The solution of numerous original exercises including loci problems. Applications to the measurement of lines and plane surfaces. —1 unit.

4. **Solid Geometry.**—The usual theorems and constructions of good text-books, including the relations of lines and planes in space; the properties and measurement of prisms, pyramids, cylinders and cones; the sphere and the spherical triangle. The solution of numerous original exercises including loci problems. Applications to the measurement of surfaces and solids. —$\frac{1}{2}$ unit.

5. **Plane Trigonometry.**—The subject matter of plane trigonometry as presented in good text-books, including the solution of trigonometric equations of a simple character, the use of logarithms, and the solution of right and oblique triangles, and practical applications. —$\frac{1}{2}$ unit.

GROUP D. SOCIAL SCIENCE, INCLUDING HISTORY.

This group includes History, Political Economy, Commercial Law.

Although there are excellent text-books in History, adequate preparation cannot be obtained by text-book work only. Some collateral work is necessary, whatever text-book is used, and with certain text-books a large amount is necessary. The details of the preparatory work in History are fully stated in A History Syllabus for Secondary

Schools, by the New England History Teachers' Association. Boston, D. C. Heath & Co., 1904.

1. **American History and Civics.**—The work in Civics must include at least a study of the Constitution of the United States. Representative text-books are Channing's Students' History, Hart's Essentials of American History, Montgomery's Students' History and Larned's History of the United States. —1 unit.

2. **Ancient History (Grecian and Roman).**—Representative text-books are Morey's Greek History, Myers' History of Greece, Allen's Roman People, Morey's Roman History, Myers' Rome, West's Ancient World, and Wolfson's Essentials of Ancient History. —1 unit.

3. **English History.**—Representative text-books are Larned's History of England, Montgomery's English History, and Walker's Essentials of English History. An excellent preparation may be made by the combined use of Trenholme's Outline of English History, Cheyney's Short History of England and Cheyney's Readings in English History. —1 unit.

4. **Mediaeval and Modern History.**—Representative text-books are Harding's Essentials of Mediaeval and Modern History and Myers' Mediaeval and Modern History. —1 unit.

5. **Political Economy.**—(1) The study of the text of Bullock or Laughlin, or equivalent, complete.

(2) At least six topics investigated by outside reading by each pupil. —1 unit.

6. **Commercial Law.**—(1) Study of a standard text.

(2) The study of a total of not less than twenty-six specific cases. —1 unit.

GROUP E. NATURAL SCIENCE.

Accompanying the certificates for each of the sciences the student must present at entrance a note-book containing records and drawings of his or her observations and experiments in the laboratory, which must bear the certificate of the teacher in charge that the work was done personally in the laboratory.

1. **Botany.**—Coulter's Text-Book of Botany, Bergen's Foundations of Botany, or an approved equivalent, occupying five periods per week for one year, of which at least one is devoted to laboratory work. —1 unit.

2. **Botany and Zoölogy.**—Bergen's Elements of Botany, or an approved equivalent, occupying five periods per week for a half year, of which at least one is devoted to laboratory work. —½ unit.

Kellogg's Elementary Zoölogy, Linville and Kelly's Text-book in General Zoölogy. Jordan, Kellogg and Heath's Animals, Needham's Lessons in Zoölogy, Coulton's Zoölogy, or an approved equivalent, occupying five periods per week for a half year, of which at least one is devoted to laboratory work. —½ unit.

3. **Chemistry.**—Elementary Inorganic Chemistry equivalent to the work covered in Remsen's Briefer Course, Hessler & Smith's Essentials, McPherson & Henderson's Elementary Study or Newell's Descriptive Chemistry, accompanied in each instance with laboratory practice. —1 unit.

4. **Geology.**—Leconte's Compend or an approved equivalent. —½ unit.

5. **Physics.**—The preparation required for entrance in Physics shall be an equivalent of five exercises a week for one year, of which at least two are devoted to laboratory work. —1 unit.

ADMISSION BY CERTIFICATES.

Graduates of high schools and academies approved by the college may be admitted by certificates. Principals must certify only such students as have by their preparation justified the belief that they are qualified for admission to college. Approval of a school will be withdrawn whenever it appears that the work of the school does not reach the standard required by the college. The candidate will be examined on all requirements not covered by the certificate.

Divided certificates from two or more schools will be accepted when the preparatory work has been done in more than one institution.

The certificate must be made out on a blank furnished by the college and should be mailed to the dean at the close of the school year. Certificate forms will be furnished upon application to Dean C. H. Pettee.

JUNE AND SEPTEMBER ENTRANCE EXAMINATIONS.

Examinations will be given in June and September in the subjects presented for admission. Candidates will present themselves at the registrar's office at 8 a. m. on the first day of the examinations.

SCHEDULE.

Tuesday, June 23, 1914.
Tuesday, September 8, 1914.

Mediaeval and Modern History	8.30–10.30 A. M.
Algebra	10.30–12.30 A. M.
English	1.30– 3.30 P. M.
Plane Geometry	3.30– 5.30 P. M.

Wednesday, June 24, 1914.
Wednesday, September 9, 1914.

English History	8.30–10.30 A. M.
Physics	10.30–12.30 A. M.
Latin, elementary	1.30– 3.30 P. M.
Latin, advanced	3.30– 5.30 P. M.

Thursday, June 25, 1914.
Thursday, September 10, 1914.

Chemistry	8.30–10.30 A. M.
American History	10.30–12.30 A. M.
French	1.30– 3.30 P. M.
Solid Geometry	3.30– 5.30 P. M.

Friday, June 26, 1914.
Friday, September 11, 1914.

Ancient History	8.30–10.30 A. M.
Plane Trigonometry	10.30–12.30 A. M.
German	1.30– 3.30 P. M.
Botany	3.30– 5.30 P. M.

Examinations not scheduled will be arranged.

DEGREES.

The degree of Bachelor of Science is conferred in the different divisions of the college upon completion of the following requirements:

Agricultural Division.

The completion of the following semester hours:

In 1914, 150 hours.
In 1915, 150 hours.
In 1916, 145 hours.
In 1917, 140 hours.

The completion of the studies required in one of the following branches:

(a). Animal Husbandry and Dairying.
(b). Forestry.
(c). Horticulture.
(d). General Agriculture.

Students graduating from the four-year courses in agriculture in 1915 and thereafter must present to the dean on or before the second Tuesday preceding commencement satisfactory evidence of having had practical experience in farm work, either through having lived on a farm for at least two years subsequent to the age of 12 or through having worked on a farm for at least six months subsequent to the age of 16.

Students graduating from the Forestry Course must have spent at least three months in practical forest work, which time will be counted as a part of the six months' requirement.

Arts and Science Division.

(a). General Arts and Science.

1. The completion of 132 semester hours, of which a

minimum of 18 shall be required each semester of the freshman year and a minimum of 16 hours each semester thereafter.

2. The completion of English 51 and 52.

3. The completion of major and minor requirements as follows:

The Arts and Science courses are divided into three groups:

Group I.—Languages and Literature: English, French, German, Latin, Spanish.

Group II.—Mathematics and Sciences: Mathematics, Zoölogy, Botany, Geology, Meteorology, Chemistry, Home Economics, Agriculture,* Drawing, Physics.

Group III.—History, Social Science, and Psychology: History, Political Science, Economics, Sociology, Psychology.

All Arts and Science students shall elect one of these groups as a major in which 24 semester hours must be completed. A grade of 70 must be received in all subjects offered as a fulfilment of the major group requirement. The other two groups shall be minors, in each of which the student is required to complete 18 hours of work.

The selection of the major shall be made at the beginning of the junior year and submitted for approval to the secretary of the Arts and Science Committee at the time of registration.

(b). Home Economics.

The completion of 132 semester hours.

The completion of the courses required in the Home Economics branch.

(c). Mechanic Arts for Teachers.

The completion of 144 semester hours.

The completion of the courses required in the Mechanic Arts Course for Teachers.

*Agriculture as a part of minor requirement only.

Engineering Division.

The completion of 144 semester hours.

The studies required in one of the following branches:

(a). Chemical Engineering,
(b). Electrical Engineering,
(c). Mechanical Engineering.

Students not Classified.

Candidates for the degree of Bachelor of Science who fail to satisfy the requirements of the Agricultural, the Arts and Science, or the Engineering Division may be graduated unclassified under the following conditions:

1. The completion of all work common to the four-year courses.
2. The completion of 144 semester hours.
3. The completion of all but ten or less semester hours in some one of the regular four-year courses.
4. Approval by the faculty not earlier than June first preceding the year of graduation.

ADVANCED DEGREES.

Advanced degrees may be conferred upon candidates who have received the degree of B.S. from this college or any institution of like standing upon the fulfilment of the following requirements:

Degree of M.S.—The successful completion of a course of graduate study pursued in residence and approved by the faculty of the college.

The preparation of an original thesis satisfactory to the faculty of the college.

Degree of M.E.—Professional experience of at least four years.

The successful completion of a course of graduate study approved by the Engineering Division Committee.

The preparation of an original thesis satisfactory to the

faculty of the college upon some subject approved by the Engineering Division Committee.

For details concerning the regulations governing the conferring of degrees address Dean C. H. Pettee.

THESES.

The preparation of a thesis upon some subject connected with the work of the division may be required of candidates for a degree by the division committee.

The subject of a thesis, together with a written approval by the head of the department concerned, must be filed with the registrar within one week of the opening of the second semester. The thesis is to be submitted to the head of the department not later than the second Tuesday preceding commencement day.

The thesis is to be typewritten or printed upon standard thesis paper, eight and one-half by eleven inches, medium weight, and must be neatly bound in black cloth and gilt-lettered on the first cover with title, name of author, degree sought and year of graduation. This bound copy is to be filed and left with the college librarian.

SENIOR STANDING AND DEFICIENCIES.

The regular work of the senior class, including the regular final examinations, is completed at 4 p. m. on the Tuesday of the week preceding commencement, and each member of the class may receive a statement of his standing at the office of the registrar at 2 p. m. on the following Thursday.

All deficiencies must be removed by 6 p. m. of the Saturday of the same week.

BUILDINGS AND EQUIPMENT.

BUILDINGS.

The college is housed in ten large buildings scattered over a handsome campus in the outskirts of the village. Of these buildings six are devoted to offices, recitation rooms or laboratories; one is the large armory and gymnasium, one the dormitory for women, one the library, containing the books of the college and the town of Durham, and one the home of the experiment station. Besides these there are the college barn, several smaller barns, an insectary, a poultry laboratory, poultry houses, and a range of greenhouses.

The latest addition to the college equipment is the new engineering building, just completed at a cost of $80,000 from the plans of James H. Ritchie of Boston.

The building is placed across the right of way formerly occupied by the Boston and Maine railroad, facing Main street. This building is the most prominent of the engineering group.

The material is red brick with gray terra-cotta trimmings. The building has a three-story central section flanked by two wings and with a low laboratory for heavy electrical and mechanical machinery in the rear. The main structure measures 136 feet front by 60 feet deep. The interior corridors have brick walls; the floors are carried on steel beams and heavy timbers, closely spaced to give strength and rigidity. The roof is supported on steel and covered with plastic slate.

The construction of this building enables the departments of Drawing, Mechanical Engineering, Electrical Engineering, and Physics to vacate space in Thompson and Conant Halls for the use of other departments which sorely need the room.

Besides the necessary lecture, recitation rooms, storage rooms and laboratories there is in the basement a room reserved for the use of a mechanician, and on the first floor a room for the use of students for study, computing and reading. Two toilet rooms are provided.

On the rear of the building a fire escape leads down from each floor to the roof of the laboratory section, while in the wing devoted to physics there is a winding stair from the immediate neighborhood of the lecture room to a basement room which communicates directly with the outside.

The department of Drawing occupies the entire top story of the middle section, with two main rooms and a blue-printing room. On the second floor it also has recitation and drawing rooms.

The department of Mechanical Engineering shares the second floor with those of Drawing and Physics, occupying there its offices, lecture and recitation rooms and a drawing room. It also occupies a large portion of the low basement laboratory section in the rear, which is to be fitted with machinery for the study of the properties of steam and water in their technical applications.

The department of Electrical Engineering has offices, lecture, recitation and drawing rooms on the first floor, together with a spacious suite of storage and experimental rooms in the basement, and in the rear laboratory section a laboratory for dynamo electric machinery.

The department of Physics occupies the whole of the west wing of the building. On the second floor is a lecture room, seating about one hundred, and a room for the storage of apparatus; on the first floor a large elementary laboratory, together with a suite of storage, office and recitation rooms in the middle section; in the basement are an intermediate laboratory, small rooms for special work, and others for storage battery and switchboard purposes.

The building is ventilated by the unit system, whereby air is drawn from the outside and blown through heating coils into the rooms directly and discharged through grill

panes in the doors without long and tortuous flues and pipes. The ventilation of each room is directly under the control of the person in charge of the room. The lighting is by incandescent lamps controlled by switches conveniently placed for economical control, with all wiring concealed. The heating is by steam supplied from the central heating plant. All roof conductors are inside the building.

For experimental purposes a system of wiring entirely distinct from the lighting system is used. On one circuit all the connections for the projection lanterns in the various lecture rooms are placed, so that these may be at any time conveniently used with direct current; other wires for conveying power are run from the panels of a central distributing switchboard in the main laboratory of the department of Electrical Engineering to smaller distributing boards in other portions of the building, so that either direct or alternating current of various voltages and frequencies may be delivered practically anywhere in the building.

Thompson Hall is the main administration building and from its eminence commands a view of the entire campus. It contains besides recitation rooms and the large assembly hall where chapel exercises are held, the offices of the president and the dean, and the headquarters of the departments of Modern Languages, Mathematics, Zoölogy, Economic Entomology, and Home Economics.

Conant Hall, formerly the main science building, is now devoted exclusively to the department of Chemistry. This building contains many laboratories and the most complete equipment for teaching chemistry in the state.

Morrill Hall is the headquarters of the Agricultural department of the college and also has the office of the director of the experiment station and the experiment station library. In this building are the laboratories and lecture rooms of the departments of Agronomy, Animal Husbandry, Horticulture, Poultry Husbandry, and Forestry. The building also contains a collection of farm implements, a dark room and a cattle judging room.

Nesmith Hall is occupied by the departments of Chemistry and Botany of the experiment station and contains the laboratory and lecture room of the department of Botany of the college.

The Mechanical Engineering building contains a wood shop, a machine shop, a forge shop, a foundry and laboratories of the Mechanical Engineering department.

In the Armory are the lecture rooms and offices of the Military department, the rooms of the College Club and a large drill hall or gymnasium.

The Dairy building is arranged and equipped in the most up-to-date and sanitary manner. It contains a commercial creamery, with separator room, churning room and cold storage room; laboratories for giving instruction in milk testing, milk inspection, farm butter and cheese making and bacteriology; a reading and exhibition room; a class room and offices.

Smith Hall, the woman's dormitory, was made possible by the generosity of Mrs. Shirley Onderdonk, of Durham, who gave $16,000 as a memorial to her mother, Mrs. Alice Hamilton Smith. The remainder of the cost, $10,000, was provided by the state. The building furnishes accommodations for thirty-two students.

In accordance with an act of consolidation between the libraries of Durham and the college, the books of the Durham public library and the college are all shelved in one building and form the Hamilton Smith public library. This consolidation makes an especially good collection, the scientific books of the college supplementing well the more popular books of the town library. The consolidated libraries number about 32,000 bound volumes and 12,000 pamphlets. The departments of Psychology and Sociology, of History and Political Science and of Economics are located in the library building.

Aside the from main library, each department has its working library of the more technical books and those which are of special use in the laboratories and work-shops.

EQUIPMENT.

Agronomy.—For the teaching of farm equipment and machinery, this department is provided with drainage levels for laying out drains, plane tables for making farm maps and a dynamometer and several other pieces of apparatus for studying draft problems. For farm crops work it has a very complete collection of dried specimens of the different forage crops, and the more important varieties of corn, wheat and oats. Seed testing apparatus, grass charts and other illustrative material form a part of the equipment.

A new combined lantern and reflectoscope with a moving picture attachment, together with a large number of lantern slides, has recently been installed in the lecture room.

The soil physics laboratory is equipped with soil bins, a new compacting machine, chemical and torsion balances and various kinds of physical apparatus for the study of soils, including that for the determination of specific gravity and for the making of mechanical analyses.

The agricultural museum contains many of the latest models of the different makes of farm machinery, tools and appliances, including plows, cultivators, harrows, mowers, rakes, corn and grain binders, threshers, manure spreaders, gasolene engines, different kinds of cattle ties and various makes of patent wire fences.

The college farm, with its 380 acres of land, has a variety of soils and soil conditions suited to the growth of nearly all the important farm crops, and thus offers excellent opportunities for practical work and demonstration in the department of agronomy.

Animal Husbandry.—For the various courses in animal husbandry an extensive use is made of the live stock of the college farm. The dairy herd consists of representative animals of the following breeds: Ayrshires, Guernseys, Jerseys and Holsteins. The college owns seven horses repre-

senting the draft type, and in order to become acquainted with the carriage and roadster types, the students are taken to various stock farms where these types may be inspected and judged. For the study of the different breeds of sheep, the experiment station flocks of pure-bred Southdowns, Shropshires, and Rambouillet are used.

A special appropriation by the last legislature has made possible a poultry department. A poultry plant is being built and a competent poultryman has been secured to take charge of the work. At present the plant consists of a number of colony houses, a large farm poultry house and a laboratory building containing an incubator cellar, killing and dressing room and work room. The following breeds of birds are represented here: Barred Plymouth Rocks, Rhode Island Reds, White Leghorns and Light Brahmas. Students are given practical instruction in judging the various breeds, management of flocks, handling of incubators and construction of poultry houses.

In the agricultural building a large room is fitted up for the judging of live stock; instruments for precise measurements are provided, and score cards with a scale of points for each kind of animal are used.

The classroom is provided with a stereopticon lantern and a large collection of lantern slides is used to show the leading individuals of the different breeds of live stock. The herd books of the most prominent breeds are used for the purpose of familiarizing the student with methods of tracing pedigrees and the practices of breeders' associations.

Botany.—The department of Botany has the usual laboratory equipment to meet the needs of the courses in general botany, plant physiology and bacteriology. In the advanced courses, owing to the connection of the department with the experiment station, students will find both the laboratory and greenhouse equipment ample for critical studies on plant diseases and plant nutrition.

Chemistry.—The several chemical laboratories are fairly well equipped. Each is supplied with most of the forms of apparatus required for its particular work. Besides all necessary glass and porcelain ware, this includes water baths, drying ovens, combustion, muffle and assay furnaces, platinum dishes and crucibles, polariscope, spectroscope, balances, lantern and other lecture appliances.

Dairying.—The Dairy department, with its new dairy building, offers excellent opportunities for instruction in technical and practical dairy work. The college creamery is well equipped with up-to-date machinery, each machine being run by a separate electric motor.

In addition to the product of the college herd, milk and cream are received from over forty farms in Durham and vicinity. By this arrangement sufficient material is furnished for practical work. The farm dairy is equipped with the leading makes of hand separator and hand and small power churns suitable for private dairies. The milk testing and milk inspection laboratory is equipped with Babcock testers, sediment testers, acidimeters and other apparatus necessary for inspection of milk and cream for fat and other qualities.

Drawing.—For free-hand model drawing and for mathematical drawing there is a good supply of geometric models; and for free-hand industrial drawing the nucleus of a good collection exists, consisting of plaster casts of historic ornament, details of human form and antique sculpture, as well as vases and common objects. There is an excellent collection of working models and machines for machine drawing, and various machines in other departments are available for this work.

Electrical Engineering.—The laboratory for electrical engineering occupies the ground floor of the south end of the new engineering building. It has a total area of about 4,500 square feet. There is one room 104 by 36 feet for

dynamo electric machinery. In this main dynamo room there is a large new distributing switchboard, on which are mounted instruments, switches, circuit breakers, ground detectors, synchronizers and plugging devices so arranged that it is possible to connect the various rooms and convey thereto direct current and single, two-phase and three-phase alternating current of different voltages and frequencies.

In addition to this main dynamo room there is a room used for photometry, one for storage battery and one for high potential experiments. The laboratory also includes an instrument room, a mechanician's room and a dark room.

The general equipment of the laboratory includesvarious dynamos and motors for both direct and alternating currents, several transformers, the necessary measuring instruments and storage batteries, adapted to the needs of students taking this course.

In addition to the regular laboratory equipment, there is available for testing purposes a fully equipped sub-station having a capacity of 75,000 watts supplied by the Rockingham County Light and Power Company, of Portsmouth, N. H. A part of this equipment consists of an automatic induction feeder regulator, including contact making voltmeter and reversing switch.

Farm Department.—An institution like New Hampshire College is not complete without a well-equipped, well-organized and properly managed farm. The farm serves as a laboratory for much of the agricultural instruction, where approved farm methods in practice may be seen and where the students may gain experience by actually performing the work with their own hands.

New Hampshire College farm comprises about 380 acres, of which about 70 are in fine timber, and about 120 are tillage land. Of this land 17 acres are in use by the Horticultural department for gardens and orchards, 8 are used for experimental work in the Agronomy department, and 8 for sheep investigations in the Animal Husbandry depart-

ment. A farm comprising 40 acres of tillage land and 160 of pasture is rented by the Farm department.

The farm buildings consist of a large storage barn, two 125-ton silos, a well-appointed, sanitary dairy stable ell, which will accommodate 38 head of cows, and a large basement under the main barn for housing young stock and dry cows. A new horse barn, 36 by 67 feet, with basement and hay storage loft has been erected and is now occupied by the Farm and Horticultural departments.

Forestry.—The demand for instruction in forestry at the state college has been increasing from year to year and the legislature of 1911 provided for a separate department of Forestry. It is now possible to educate and, in a measure, train agricultural students in scientific forestry. The course is intended to provide not only a special training in forestry, but a broad general training in other lines of agriculture closely related to it. For those who desire to make forestry their life work, every encouragement and assistance will be given.

Durham is well situated with reference to the study of woodlot forestry. All types of native second-growth forests are found near by, and the college owns a tract of sixty acres of old-growth timber where exceptional opportunities are given for the study of mature forests. There are other areas where practice will be given in establishing plantations of forest trees by various methods. A nursery for the growing of seedling forest trees has been started.

All the necessary instruments for making forest maps and measurements, together with collections of wood specimens, lantern slides and photographs, are available in connection with this work.

Home Economics.—The home economics room is furnished with laboratory desks, storage cupboards and apparatus for cooking. The desks are built in cabinet form to hold the necessary utensils and materials for each student. The tops are of Alberene stone. This provides a sanitary

working table and at the same time prevents accidents from fire. Each table is fitted with both gas and electric stoves and ovens.

The cooking utensils are of the materials best suited to the use of each, enameled steel, alumium, glass and porcelain being used. Standard measuring cups and spoons, spring and balanced scales are provided for work in general cookery. For the advanced classes in nutrition and dietetics Harvard trip scales, Dr. Hart's food scales, standard double-scale thermometers, lactometers and graduated glass cylinders are used.

The sinks are of enameled steel and of the most sanitary models.

A storage cabinet, provided with bins for supplies and cupboard space for large utensils, is covered with a nickeloid top and serves for group work and for setting up apparatus of the labor-saving type.

One side of the room is furnished with three small, portable tables and one larger one. These tables each contain a drawer for storing paper, charts and reference material. They serve the purpose of writing tables during the lecture hour and for calculations, to which much time must be given in dietetics, and also afford space for the proper display of dietaries when prepared for critical study by the class. The size of the small tables, four by two and a half feet, makes it possible to arrange them for the several purposes needed in the study of foods from either the qualitative or quantitative point of view. The three tables side by side provide a large table for the serving of regular meals to a group of six or eight; two tables end to end permit the grouping of several days' dietaries for individuals for comparative study; one table alone can be used for setting out a family dietary or for weighing and comparing 100-calorie portions of foods and special dietaries for pathological cases. Enough linen, silver, glass and china are provided for serving simple meals to class groups or invited guests.

The sewing equipment consists of sewing machines, cab-

inets, yard sticks, chairs and tables. Ample blackboard space, charts and materials for drafting patterns aid the student in the constructive work in line and form.

Horticulture.—The lecture room is fitted up with a stereopticon lantern and the collection of lantern slides is being continually enlarged. The pomological and vegetable gardening laboratories are of original design and offer every facility for modern work. A great many varieties of vegetables are grown in the experiment station trial ground, and these offer exceptional opportunities for identification and study in the laboratory for some time after field conditions have gone by. The orchards, gardens and grounds also offer opportunities for demonstrating the theories advocated in the lecture room. Propagation of fruits, shrubs and flowering plants is practised. A fine collection of Vilmorin charts is owned by the department.

Mechanical Engineering.—The mechanical laboratory equipment includes a 40-horsepower steam engine; a steam boiler especially equipped for testing; a large duplex pump; nozzles for measurements during hydraulic tests; a 10-inch standpipe, a 6,000-gallon measuring tank and other apparatus for an extensive series of hydraulic experiments; a 50,000-pound Olsen machine with the necessary tools and measuring instruments for tension, compression and transverse tests; a 12-horsepower gas engine; a Westinghouse air-brake pump with locomotive and tender attachments; steam and gas engine indicators; a surface condenser; a Bristol pyrometer; a cement testing machine with the necessary sieves and other apparatus for testing according to the recommendations of the committee for cement testing; and the usual supply of scales, gauges, thermometers and small apparatus.

Physics.—Besides the necessary furniture the department is supplied with the usual small tools, calipers, scales, balances, weights, hydrometers, calorimeters, thermometers, etc., and with other apparatus for the performance in the

laboratory of experiments in mechanics, sound, light, magnetism and electricity.

The lecture room has a small but growing collection of apparatus for the illustration, both experimentally and with the projection lantern, of the laws of matter and energy in their various relations, and of the history of physics.

Instruction is carried on by means of lectures, with mimeographed outlines furnished to students and constantly kept up to the development of the courses; recitations and discussions based on standard text-books, and experimental work in the laboratory. Mimeographed outlines are furnished for the laboratory experiments, with concise directions and references, and reports are written by the students on the results of their experiments, for examination and criticism by the teacher.

The Physics department occupies all of the west wing of the new engineering building. In the basement there are a large laboratory room for intermediate work in courses yet to be developed, two small rooms for individual work, a switchboard room, a room for storage battery and for chemical work, and a storage room. On the first floor are the general elementary laboratory, partly divided off into small rooms for work in light or for balances, a room for apparatus storage, the office and a recitation room. On the second floor are the lecture room and a room for the storage of lecture apparatus. The lecture room will seat about one hundred.

Shopwork.—The wood shop is one of the best equipped pattern shops in the country. It is supplied with benches and the necessary tools to accommodate twenty students at one time. Other equipment consists of a universal pattern maker's saw, board-planer, buzz-planer, band saw, speed-lathes and a large pattern maker's lathe with molding and boring attachments.

The equipment of the machine shop consists of engine lathes, a speed-lathe, a vertical drill, a Flather planer, a large universal milling machine, a plain milling machine, a

shaper, a power hack saw, a tool grinder, twelve benches with vises; and a large number of small tools, including micrometer, calipers and gauges necessary for accurate work.

In the forge shop are seventeen Sturtevant down-draft forges with anvils and necessary tools. The blast to the forges is furnished by a No. 4 blower, and the smoke carried away by a 60-inch exhauster. These are driven by a small steam-engine.

All the shops are operated by 550-volt three-phase induction motors, suitably connected to line shafting and driving the tools by the "group plan."

Surveying.—The surveying instruments include the usual equipment of the land surveyor: the level, transit, compass, sextant, Saegmülle attachment (solar compass), and plane-table.

Zoölogy.—Few other institutions are so favorably situated geographically for the study of zoölogy as is New Hampshire College. Within a few minutes walk of the laboratory is the Oyster river where it meets the tide water from Great Bay. This furnishes a gradation of salt, brackish and fresh water with an abundance of their characteristic fauna. Great Bay, the Piscataqua river and the open ocean are within easy access, and have their own peculiar, characteristic forms. On the other hand there are numerous bodies of fresh water, with typical fresh water forms.

The department of Zoölogy is prepared to offer courses along the following lines: (A) Systematic Zoölogy; (B) Physiology and Sanitation; (C) Philosophical Zoölogy; (D) Anatomical Zoölogy.

The equipment for the work in systematic zoölogy consists of a well-lighted laboratory, provided with tables, charts, dissecting and compound microscopes. All of the latest books and periodicals on systematic zoölogy are at the students disposal. The lecture room is fitted with a new reflectoscope capable of projecting opaque objects, text-book figures or lantern slides. The room has a seating capacity

of eighty, and is provided with armed chairs which enables the students to readily take down notes and drawing. There is a fairly complete collection of local invertebrates, and a very good collection of the birds of New Hampshire. The work in systematic entomology is greatly aided by a large and complete collection of insects which is the property of the experiment station.

The proximity to both salt and fresh water renders the work in advanced systematic zoölogy unusually attractive. In addition to the regular collecting equipment, nets, acquaria, etc., advanced students also have the use of row-boats and a gasolene launch.

In the work in physiology, hygiene and sanitation the department is provided with an unusually fine collection of injected preparations of the human body, and with numerous charts. The same laboratory and equipment is used in this work as noted above.

For work in evolution and experimental zoölogy the department has a very complete library. Studies in ecology in Great Bay and vicinity are encouraged, for which purpose the students have the use of a camera equipment. In addition to the study of evolution under natural conditions the department also furnishes acquaria for laboratory study and experiments.

The work in anatomical zoölogy is greatly facilitated by an abundance of fresh material which may be collected as needed. For the study of human and comparative anatomy a full set of skeletons and preserved material is provided. Students interested in histology have access to a private collection of some two thousand microscope slides.

Museum.—The museum had for a nucleus the collection made during the state geological survey. To this additions have been made from various sources. Specimens are being collected to illustrate the zoölogy of New Hampshire, and New Hampshire collectors and naturalists are invited to make the museum the permanent depository of their collections.

FOUR-YEAR COURSES.

AGRICULTURAL DIVISION.

The courses of this division are designed for the general education and scientific training of students in the various economic branches of agriculture. The lecture and recitation work of the classroom is supplemented largely by practical exercises in the laboratories. Seminary courses are also given, especially for seniors and advanced students. The whole curriculum is so arranged that about one third of the studies may be termed cultural, one third, scientific, and one third, technical. During junior and senior years the student has elective options in certain courses of study which enable him to specialize in animal husbandry and dairying, horticulture, forestry or general agriculture.

While the two-year course is intended to give the student as thorough training in the science and practical details of farm operations as the time will allow, it does not give the opportunity for a broad general foundation of pure and applied science that the four-year courses afford; the latter courses aim primarily to combine a college education with that of a technical vocation. Many of the graduates of the four-year courses return to the farm for the purpose of putting into practice the knowledge and training of their college work, and many of them are becoming successful and prosperous citizens of the community; others who have no farms of their own accept salaried positions as superintendents or foremen on the dairy, fruit or truck farms of large owners; still others take positions as teachers of science and agriculture in our secondary and high schools or as assistants in our agricultural colleges and experiment stations.

The Agricultural Division offers the following four-year courses of study:

Animal Husbandry and Dairy Course.—This course is designed for those students who wish to specialize either in animal husbandry or dairying Election of courses of instruction between these two departments may be made throughout the junior and senior years. The dairy building with its new and complete equipment, together with the additional courses and increased facilities for instruction in the Animal Husbandry department, make this course especially attractive.

Forestry Course.—The demand for a special and separate course in forestry has been increasing from year to year, and in view of the extent and importance of the forests and forestry operations within the state, the establishment of such a course seems well justified. The legislature of 1911 very generously provided funds for the creation of a Forestry department at the college which, for the present, will be housed on the second floor of Morrill Hall. This course is intended to provide not only a special training in forestry, but a broad general training in other lines of agriculture closely related to it. The college forest of sixty acres of old-growth pine and hemlock furnishes a splendid laboratory and ample opportunity for studying forestry questions.

Horticultural Course.—This is the course for those students who contemplate making a specialty of some line of horticultural work. Several advanced courses in botany will be required, while during the senior year opportunity will be given to elect courses in other departments. The Horticultural department is well equipped with gardens, orchards, greenhouses and laboratories for the study of the different phases of this industry, especially fruit growing, which is so prominent in the agriculture of the state.

General or Teaching Course in Agriculture.—This course is intended for those students who desire to secure a general training in the science of agriculture without specializing along some particular line. Provision is made during

both the junior and senior years for the student to elect one or more courses of instruction in whatever department he wishes.

The rapidly increasing demand for teachers in agriculture in our secondary schools has indicated the necessity of training men especially for this important line of work. In addition to the sciences and strictly agricultural work courses in pedagogy, educational psychology and rural sociology are taken during the junior and senior years.

ARTS AND SCIENCE DIVISION.

In the Arts and Science Division the following courses are offered:

General Arts and Science Course.—This course provides a general college training which especially prepares for secondary school teaching, business or graduate study. By means of the group system of elective studies an opportunity is given the student to specialize in zoölogy, botany, chemistry, physics, drawing, agriculture, mathematics, modern languages, English, psychology, sociology, political science, economics, history, and home economics.

Home Economics Course.—The course in home economics furnishes instruction in the branches that especially serve the need of women students. The work is planned to meet the demands of the day for scientific training in home making, to fit students to enter fields of professional activity in institutional and educational lines of work, and to provide thorough but somewhat less technical training for those students who wish to elect home economics as either a major or a minor subject in the Arts and Science Course.

The technical work in household science is based upon the principles of physical, biologic and social sciences. The courses in foods, nutrition and dietetics require chemistry and physiology; those in sanitation and home nursing necessitate a knowledge of chemistry and bacteriology; home

administration and the care and education of children, a knowledge of the principles of economics, psychology and sociology; and an understanding of the energy value of foods and their mechanical equivalents in work necessitates a knowledge of physics. These subjects are taken in the different departments of the college. The training in drawing and color and design which is gained in the department of Drawing finds a worthy expression in the courses in costume design, household art and home decoration.

In the arrangement of studies electives have been provided for in each year. The student is permitted to elect three semester hours of work in the freshman year, six in the sophomore year and semester hours amounting to nearly half of the total requirements for junior and senior years. This large amount of elective work affords ample opportunity for the study of modern languages, history, mathematics, social and political sciences or courses of interest to women in the other departments of the college. Provision is made for research work in the senior year for students who are prepared for it.

Mechanic Arts Course for Teachers.—This course provides an opportunity for preparation for the teaching of manual courses in secondary schools and institutions. It originated to meet the increasing demand for graduates of the college qualified to teach manual and mechanic arts courses. Although much of the work of this course is necessarily prescribed in such subjects as drawing, mathematics, shop work, English and psychology, a reasonable opportunity is given the student to elect other subjects in the Arts and Science Division. At the present time the demand for graduates from this course for secondary teaching is greater than the college can satisfy.

ENGINEERING DIVISION.

Chemical Engineering Course.—This course is intended to fit for the career of professional chemist or chemical engineer, and to give a good foundation for original and independent chemical research.

Instruction is imparted by lectures, recitations and a large amount of carefully supervised laboratory work. The laboratory course is largely an individual one and the work of each student is conducted with reference, not only to the particular object he may have in view, but also to the acquirement of a broad knowledge of chemical science. The student is given a thorough training in German and French to enable him to read with ease the chemical literature; a thorough grounding in mathematics, necessary for advanced theoretical chemistry or chemical engineering; a somewhat limited amount of special engineering work, both mechanical and electrical; and a thorough undergraduate training in theoretical and applied chemistry. He is encouraged to develop the power of solving chemical problems by independent thought through the aid of the reference works and chemical periodicals which the library contains. Owing to the fact that the laboratories are becoming crowded the number of students taking this course is limited to six in each class. These six are chosen at the close of the freshman year from those who have applied. Fitness to become successful chemists will alone determine the choice made.

Electrical Engineering Course.—The Electrical Engineering Course is intended to meet the demands of a young man fitting himself for practical and professional engineering in connection with the various applications of electricity.

By means of lectures, recitations and laboratory work, the subjects of the course are brought to the attention of the student in such a manner as not only to emphasize the present needs of the practitioner and engineer, but to give him the groundwork that will enable him to grasp and under-

stand the constantly increasing number of problems that require solution.

The instruction aims to impart a complete practical and theoretical knowledge of the best modern types of electrical machines and appliances and the methods of designing, building and operating them.

The rapid progress in recent years in applying electricity to commercial uses renders it difficult, if not impossible, for one without a technical education to gain prominence in the work and be intrusted with its more responsible positions.

Mechanical Engineering Course.—The Mechanical Engineering Course is intended to train young men for positions of responsibility in the field of the mechanical industries. The studies in the course are scientific, including mathematics, physics and chemistry; technical, including drawing, shop work, thermodynamics, hydraulics, machine design, electrical engineering, power engineering, and cultural studies, calculated to enable the technical man to take his proper place in the world of men.

Instruction is given by means of text-book work and laboratory work whenever possible. When necessary this work is supplemented by illustrated lectures and assigned reading. Throughout the course the theoretical work is supplemented by actual practice in mechanical operation and scientific research, by training in the use of tools for working wood and metals, and by experimental tests and demonstrations in the mechanical, chemical and physical laboratories.

POST-GRADUATE AND SPECIAL COURSES.

The college offers opportunity for post-graduate study in agriculture, biology and chemistry, and on the completion of satisfactory work advanced degrees will be given. Persons of mature years presenting satisfactory evidence of their ability to complete any desired course of study may be admitted as special students by vote of the faculty.

FRESHMAN REQUIREMENTS FOR THE VARIOUS FOUR-YEAR COURSES.

FRESHMAN SUBJECTS.		COURSES.
Required.	Elective.	
Chemistry Drawing English French or German Mathematics Drill Military Science Shop Work Zoölogy	None	Agricultural Division 1. Animal Husbandry and Dairy Course 2. Forestry Course 3. Horticultural Course 4. General Agricultural and Agricultural Teaching Course
English Drill Military Science *Physical Culture	Chemistry Drawing English French German History Latin Mathematics Zoölogy Economics	Arts and Science Division 1. Arts and Science Course
Chemistry English Home Economics Physical Culture Zoölogy Drawing	French German History Mathematics	2. Home Economics Course
Chemistry Drawing English Mathematics Drill Military Science Shop Work	None	3. Mechanic Arts Course for Teachers
Chemistry Drawing English Mathematics Drill Military Science Shop Work Electrical Engineering Mechanical Engineering	None	Engineering Division 1. Electrical Engineering Course 2. Mechanical Engineering Course
Chemistry Drawing English Mathematics Drill Military Science Shop Work French or German	None	3. Chemical Engineering Course

* Physical Culture for women takes the place of Drill and Military Science for men.

DESCRIPTION OF STUDIES.

AGRONOMY.

PROF. TAYLOR, ASST. PROF. STOKES.

51. Farm Equipment and Machinery.

Lectures and recitations upon the equipment of farms; fencing; drainage; tillage and harvesting machinery; concrete construction; silos; farm motors; roads and principles of draft. Practical work in map making, laying out drains, rope splicing, comparing farm machines, etc. For Agricultural Sophomores. *Three exercises per week. 1st S.*

52. Soils.

Text-book and recitations upon the formation, kinds and physical properties of soils; the movements and conservation of soil moisture; the relation of heat and air to soil; the nature and physical effects of tillage and fertilizers; laboratory work and experimentation with soils to show the physical effects of different conditions and texture. For Agricultural Juniors. *Three exercises per week. 2d S.*

53. Farm Crops.

Text-book and recitations upon the history, use, value and methods of culture of our various farm crops, including hay and grass, with particular reference to New England conditions. Laboratory practice in judging the different varieties of grains and grasses. For Agricultural Juniors except in Forestry Course.

Three exercises per week. 1st S.

54. Fertilizers.

Lectures, text-book and recitations upon the principles of fertility and plant nutrition. A study of the value and use of plant food materials, including farm manures. For Agricultural Seniors except in Forestry Course.

Prerequisites—Chemistry 51 and 52. Three exercises per week. 2d S.

55. Farm Management.

Text-book, lectures and recitations upon different types of farming, size of farms, cropping systems, marketing farm products, choice of a farm, and farm records and accounts. Practical work in laying out, planning, scoring, and making inventories of farms. For Agricultural Seniors except in Forestry Course.

Prerequisite—Agronomy 51. Three exercises per week. 1st S.

56. Special Agronomy.

Advanced work for students interested in some particular line. No class exercises. The hours and kind of work must be arranged with the department before the course is elected. For Agricultural Seniors.

Prequisite—All preceding courses in Agronomy except 54.

Three exercises per week. 2d S.

57. Agricultural Seminar.

Library and reference work, the preparation of bibliographies, a study of the work and history of agricultural colleges and experiment stations. Lectures upon the history of agriculture. Elective for Agricultural Seniors. *Two exercises per week. 1st S.*

ANIMAL HUSBANDRY.

PROF. ECKMAN, ASST. PROF. MITCHELL, MR. JONES.

51. Types and Breeds of Live Stock.

A study of the different breeds of horses, cattle, sheep, and swine in respect to their origin, history, development, characteristics, and adaptability to different conditions of climate and soil. One afternoon each week is devoted to judging the different breeds. For Agricultural Sophomores. *Four exercises per week. 1st S.*

52. Advanced Stock Judging.

The work of this course consists of judging and measurement, and special problems concerning the various breeds. Students intending to compete for the Live Stock Judging Team should elect this course. Elective for Agricultural Sophomores. Open to students only by permission of the head of the department.

Prerequisite—Animal Husbandry 51. Two exercises per week. 2d S.

54. Feeds and Feeding.

Lectures and recitations upon the laws of nutrition; composition and digestibility of feed stuffs; influence of feed on the animal body; a study of leading cereals and by-products; feeding standards. Practice will be given in computing and compounding rations for various purposes. For Agricultural Juniors, except students in Forestry.

Prerequisites—Chemistry 51 and 52. Three exercises per week. 2d S.

55. Veterinary Anatomy.

Lectures and recitations upon the anatomy and physiology of the domesticated animals. Special attention is paid to the study of the horse and cow. Skeletons, various anatomical specimens, models, charts and lantern slides are used to make the subject as practical as possible. This course is designed to give a foundation for the study of animal diseases, surgery, etc. For Animal Husbandry Juniors. Elective for others. *Three exercises per week. 1st S.*

56. Veterinary Medicine.

Lectures and recitations upon the principal diseases and ailments of farm animals, medicines, and methods of administering; minor surgery. For Animal Husbandry Juniors. Elective for others.

Prerequisite—Animal Husbandry 55.

Three exercises per week. 2d S.

57. Breeding and Management.

A course consisting of lectures and recitations upon the principles and practices of animal breeding, and the general care and management of live stock. For Seniors in Animal Husbandry and Dairy Course.

Prerequisites—Animal Husbandry 51 and 54.

Three exercises per week. 1st S.

59. Sheep Raising.

Lectures and recitations upon the breeds of sheep; adaptability to this section; care and management; fitting for the shows, and feeding for market purposes; the raising of hot-house lambs; also practical exercises in judging the various breeds. Elective for Agricultural Seniors. *Three exercises per week. 1st S.*

61. Poultry.

This course covers the subjects of poultry house construction, types and breeds of poultry, feeding, killing and dressing, caponizing, and equipment. Elective for Agricultural Juniors.

Three exercises per week. 1st S.

62. Poultry.

This course covers the subjects of incubation, brooding, care of young stock, market poultry, poultry diseases, and poultry farm problems.

Prerequisite—Animal Husbandry 61.

Three exercises per week. 2d S.

63. Advanced Veterinary Medicine.

A course of lectures upon obstetrics, surgery, and pharmacy. Elective for Agricultural Seniors.

Prerequisites—Animal Husbandry 55 and 56.

Three exercises per week. 1st S.

BOTANY.

PROF. BUTLER, ASST. PROF. BLACK, MISS TEMPLETON.

51. General Botany.

Morphology and histology of plants. Lectures and laboratory work. For Agricultural Sophomores. Elective for other students. Given in two sections. *Three exercises per week. 1st S.*

52. General Botany.

Organography and classification of plants. Lectures and laboratory work. For Agricultural Sophomores. Elective for other students. Given in two sections.

Prerequisite—Botany 51. *Three exercises per week. 2d S.*

53. Plant Physiology.

Structure and properties of the cell, absorption and movement of water; metabolism; growth and irritability. Lectures and laboratory work. For Forestry, Horticultural and General Agricultural Juniors. Elective for other students.

Prerequisite—Botany 52. *Three exercises per week. 1st S.*

54. Plant Histology.

Technique. Characterization and differentiation of plant tissues. Comparative histology. Occasional lectures; laboratory work. For Forestry Juniors. Elective for other students.

Prerequisite—Botany 52. *Three exercises per week. 2d S.*

55. General Bacteriology.

Lectures on the morphology and physiology of the bacteria, the principal bacterial diseases, the rôle of bacteria in the arts and industries. Lectures. For Home Economics Juniors. Elective for other Juniors and Seniors. *Three exercises per week. 1st S.*

56. Bacteriology.

Technique. Morphology and biology of the principal non-pathogenic and pathogenic bacteria. Laboratory work.

Prerequisite–Botany 55 except for Animal Husbandry and Dairy students. *Three exercises per week. 2d S.*

57. Plant Pathology.

Diseases of plants, their symptoms, causes and prevention. Lectures and laboratory work. For Forestry and Horticultural Seniors. Elective for other students.

Prerequisite—Botany 53. *Three exercises per week. 1st S*

58. Mycology.

Morphology and biology of the fungi. For advanced students. Occasional lectures, laboratory work.

Prerequisite—Botany 57. *Two exercises per week. 2d S.*

59. Embryology.

Technique. Origin and development of the embryo. For advanced students. Occasional lectures; laboratory work.

Prerequisite—Botany 53. *Two exercises per week. 1st S.*

60. Advanced Botany.

For advanced students. Prerequisites will depend on the nature of the subject selected for study.

Credit and hours by arrangement. 2d S.

61. Advanced Botany.

For advanced students. Prerequisites will depend on the nature of the subject selected for study.

Credit and hours by arrangement. 1st S.

CHEMISTRY.

PROF. JAMES, ASST. PROF. PERLEY, MR. KATZ, MR. HOLDEN.

51. Inorganic Chemistry.

Lectures and recitations on general and theoretical chemistry, illustrated by experiments, charts, specimens, lantern views, etc. Solution of chemical problems will be required. For Agricultural and Engineering Freshmen. Elective for other Freshmen.

Three exercises per week. 1st S.

52. Inorganic Chemistry.

A continuation of Course 51, but the time will be mainly spent on the metallic elements, their metallurgy, salts, etc.

Prerequisite—Chemistry 51. *Three exercises per week. 2d S.*

54. Qualitative Analysis.

Laboratory practice, with occasional lectures and recitations. The student is expected to become proficient in the separation and detection of the common acids and bases and to keep a full set of notes. For Engineering Freshmen.

Prerequisite—Chemistry 51. *Three exercises per week. 2d S.*

55. Inorganic Chemistry.

Similar to Chemistry 51. For Home Economics Freshmen.

Three exercises per week. 1st S.

56. Special Chemistry.

A continuation of Course 55 and differing slightly from Course 52.
Prerequisite—Chemistry 55. *Three exercises per week. 2d S.*

57. Special Organic Chemistry.

A study of the more important organic compounds from the viewpoint of the Home Economics student. For Home Economics Sophomores.
Prerequisites—Chemistry 55 and 56. *Three exercises per week. 1st S.*

59. Introductory Qualitative Analysis.

A brief introductory course in qualitative analysis specially arranged for Agricultural students. For Agricultural and Mechanic Arts Sophomores. Elective for Arts and Science students.
Prerequisite—Chemistry 51. *Two exercises per week. 1st S.*

60. Quantitative Analysis.

Introduction to quantitative analysis, consisting of the analyses of simple compounds and materials such as feeds, fertilizers, soils, water, etc. For Agricultural Sophomores.
Prerequisites—Chemistry 51 and 52. *Three exercises per week. 2d S.*

61. Qualitative Analysis.

A short advanced course for Chemical Sophomores on insoluble substances and the rarer elements, to precede Chemistry 65.
Twenty exercises. 1st S.

63. Inorganic Preparations.

A brief course upon the preparation and purification of inorganic compounds, including their extraction from minerals. For Chemical Sophomores.
Prerequisites—Chemistry 51 and 52. *Twelve exercises. 1st S.*

65. Quantitative Analysis.

A preliminary course in quantitative analysis to familiarize the student with the general methods of chemical manipulation and analysis. For Chemical Sophomores. Elective for Arts and Science Sophomores, Juniors and Seniors, provided laboratory facilities permit.
Prerequisite—Chemistry 54. *Four exercises per week. 1st S*

66. Quantitative Analysis.

A continuation of Chemistry 65. For Chemical Sophomores.
Five exercises per week. 2d S.

68. Organic Chemistry.

Lectures and recitations. A study of the chemistry of the carbon compounds. For Chemical Sophomores. Elective for Arts and Science students.

Prerequisites—Chemistry 51 and 52. Three exercises per week. 2d S.

69. Organic Chemistry.

A continuation of Course 68. For Chemical Juniors. Elective for Arts and Science students.

Prerequisite—Chemistry 68. Two exercises per week. 1st S.

71. Organic Chemical Laboratory.

The course consists mainly of laboratory practice in preparing and purifying organic compounds. Lectures and recitations will be held from time to time in connection with the practice. For Chemical Juniors. Elective for Arts and Science students.

Prerequisite—Chemistry 68. Three exercises per week. 1st S.

73. Advanced Quantitative Analysis.

This course will be made to fit the end which each student has in view and will be largely an individual one. For those students desiring to specialize in agricultural and food chemistry the analysis made will tend in the main toward agricultural products, fertilizers, mucks, marls, manures, dairy products, waters, foodstuffs, sugars, etc. For the student wishing to enter metallurgical works, the analyses will be in the main upon iron and steel and other metals, ores, limestones, slags, alloys, fuels, etc. As a preparation for the study of medicine, work will be done on poisons, drugs, foods, urine, etc. Other lines will be arranged to meet the wants of the individual student. Each student will be given some practice in all of the branches of agricultural, metallurgical, medical, sanitary and industrial chemistry, in order to lay a foundation for any future work which may be required of him. A short course in gas and oil analysis will also be provided. For Chemical Juniors.

Prerequisite—Chemistry 65. Four exercises per week. 1st S.

74. Advanced Quantitative Analysis.

A continuation of Chemistry 73. For Chemical Juniors.

Five exercises per week. 2d S.

75. Physical Chemistry, Lectures.

Advanced study of chemical theory. Practical experiments will be performed with the aid of the student, in the determination of vapor density, molecular weights, specific heat, etc.; and the study of isomorphism, diffusion of gases, solutions, ionization, electrolysis, molecular and atomic volume, thermo chemistry, equilibrium, the phase rule,

etc. will take up much of the time. For Chemical Juniors or Seniors. Elective for Arts and Science students.

Prerequisites—Chemistry 51 and 52. Three exercises per week. 1st S.

76. Physical and Electro Chemistry, Lectures.

A continuation of Course 75. For Chemical Juniors or Seniors. Elective for Arts and Science students. *Three exercises per week. 2d S.*

77. Advanced Inorganic Chemistry.

Advanced study of the elements and their compounds. For Chemical Juniors and Seniors. Elective for Arts and Science students.

Prerequisites—Chemistry 51 and 52. Three exercises per week. 1st S.

78. Industrial Chemistry.

Lectures on chemical manufactures, such as sugar, sodium carbonate, fertilizers, sulphuric acid, glass, matches, paints, dyes, soaps, illuminating gas, petroleum, etc. The lectures will be illustrated by lantern views, and trips to the leading New England cities to examine important chemical manufactures will be taken as far as practicable. For Chemical Juniors or Seniors.

Prerequisites—Chemistry 51 and 52. Two exercises per week. 2d S.

79. Assaying.

A course in the fire assay of gold and silver ores. For Chemical Seniors.

Prerequisite—Chemistry 65. Seventeen exercises. 1st S.

80. Metallurgy.

Lectures describing the processes employed in the smelting of ores, of iron, lead, copper, zinc, silver, gold, etc., and the methods used in refining these metals. The lectures are illustrated by stereopticon and by specimens of metallurgical products. For Chemical Juniors or Seniors.

Prerequisites—Chemistry 51 and 52. One exercise per week. 2d S.

Chemistry 78 and 80 are given in alternate years with Chemistry 76.

83. Advanced Quantitative Laboratory.

Especially arranged for students of the Chemical Engineering Course. May merge at any time into 84 and will usually do so about the middle of the first semester. For Chemical Seniors.

Six exercises per week. 1st S.

84. Thesis. (Chemical Research.)

The work of the last semester of the Chemical Engineering Course is given up to the special study of some selected subject in any branch of chemical science and the student is required to present a thesis showing him to be capable of independence of thought and manipulation. For Chemical Seniors. *Six exercises per week. 2d S.*

DAIRYING.

PROF. RASMUSSEN, MR. WILSON.

51. Domestic Dairying.

Nutritive and economic value of milk; milk hygiene, and the relation of milk to public health; market milk, modified milk, condensed milk, milk powders, fermented milks; butter, cheese and ice cream. Demonstrations are given in manufacture and in testing purity of dairy products. Two lectures and one laboratory period. Elective for Home Economics and Arts and Science Juniors and Seniors.

Three exercises per week. 1st S.

52. Farm Dairying.

Dairying in its relation to other branches of agriculture and other industries; study of the composition of milk; the use of the Babcock test, and tests for determining acidity of milk; the use of the lactometer in detecting adulteration of milk; value and methods of keeping records of dairy cows; coöperation in dairying.

Three exercises per week. 2d S.

53. Butter Making.

A study of the secretion, and of the chemical and physical properties of milk; different systems of creaming, and factors influencing efficiency of hand separators; pasteurization, cream ripening, commercial starters, churning and machinery. Required for Animal Husbandry and Dairy Juniors. Elective for other Agricultural students.

Prerequisite—Dairy 52. Three exercises per week. 1st S.

54. Market Milk.

A study of the value of milk as a food; the production and handling of market milk, of certified and modified milk, and commercial milk inspection. Exercises will be given in the judging of milk and cream and scoring of dairy barns. For Animal Husbandry and Dairy and General or Teaching Juniors. Elective for all other students.

Prerequisite—Dairy 52. Three exercises per week. 2d S.

55. Factory Management.

Lectures and recitations on the organization, location, construction and operation of factories; special problems connected with the manufacture of butter; dairy conditions in foreign countries; scoring of butter. Elective.

Prerequisites—Dairying 52 and 53. Three exercises per week. 1st S.

57. Dairy Bacteriology.

Methods of bacteriological analysis of milk and its products; isolation and study of the different types of dairy bacteria; study of effect of

separation, clarification, pasteurization, aëration, and straining on bacteria in milk. Elective for Animal Husbandry and Dairy Seniors.

Prerequisite—Botany 56. *Three exercises per week. 1st S.*

58. Cheese Making.

Lectures and laboratory work covering the details of manufacture, curing and marketing of the more important kinds of cheese.

Prerequisite—Dairy 52. *Three exercises per week. 2d S.*

60. Ice Cream Making.

A study of the making, handling, and marketing of lacto, ices, and ice cream. Elective.

Prerequisite—Dairying 51 or 52. *Two exercises per week. 2d S.*

62. Judging Dairy Products.

Practice in judging milk, cream, butter, cheese and ice cream. One lecture and one laboratory. Elective.

Prerequisites—Dairying 52, 53, 54 and 58.

Two exercises per week. 2d S.

64. Dairy Research.

A study of the work of the experiment stations and other dairy literature. Elective.

Prerequisite—6 credit hours in Dairying.

Two exercises per week. 2d S.

DRAWING.*

PROF. PUTNAM, MR. LATON.

These courses are of an industrial nature and include both free-hand and mathematical branches of the subject.

51. Engineering Drawing. Prof. Putnam, Mr. Laton.

Free-hand lettering; free-hand drawing; use of instruments; mathematical drawing; inking; systems of object drawing; orthographic projection; isometric drawing. For Engineering and Mechanic Arts Freshmen. Elective for Arts and Science Freshmen.

Two exercises per week. 1st S.

53. Shop Mathematics. Prof. Putnam.

The application of mathematical principles to the solution of shop problems. For Electrical and Mechanical Engineering Freshmen.

Two exercises per week, first half of semester. 1st S.

*Students are advised not to purchase drawing instruments or supplies before consultation with the drawing instructor.

54. Industrial Drawing and Elementary Farm Building Construction. Prof. Putnam.

A brief study in the use of drafting instruments, together with the drawing of plans of simple farm buildings, including the study of the necessary bill of materials and approximate cost of construction. For Agricultural Freshmen. *Two exercises per week. 2d S.*

55. Color Problems.

A study of color theories, harmonies, qualities, and nature color. For Home Economics Sophomores. *One exercise per week. 1st S.*

56. Descriptive Geometry. Prof. Putnam, Mr. Laton.

Recitations and drawing exercises in the solution of geometrical problems by orthographic projection, including practical problems on bridge beams, rafters, piping, etc. For Electrical and Mechanical Engineering Freshmen.

Prerequisites—Drawing 51 and Mathematics 53.

Three exercises per week. 2d S.

57. Machine Drawing. Mr. Laton.

Working drawings, including the making of tracings, blue prints, and Van Dyke prints of various machines and machine tools. For Electrical and Mechanical Sophomores. *Three exercises per week. 1st S.*

58. Descriptive Geometry. Prof. Putnam.

Special drawing arranged to meet the needs of students in the Mechanic Arts Course. For Mechanic Arts Freshmen.

Four exercises per week, first half of semester. 2d S.

59. Design of Farm Buildings. Prof. Putnam.

This course is a continuation of Drawing 54 and consists of drawings of floor plans and framing details of farm buildings. Elective for Agricultural Juniors. *Two exercises per week. 1st S.*

60. Mechanical Drawing.

Free-hand lettering; free-hand drawing; use of instruments, and drawing of house plans. For Home Economics Freshmen.

Two exercises per week. 2d S.

61. Special Drawing. Prof. Putnam.

A continuation of Drawing 58, including the study of Descriptive Geometry. For Mechanic Arts Sophomores.

One exercise per week. 1st S.

62. Special Drawing. Prof. Putnam.

A continuation of Drawing 61, including the study of machine details. For Mechanic Arts Sophomores. *Two exercises per week. 2d S.*

64. Free-hand or Charcoal Drawing. Prof. Putnam.

Elective for Arts and Science Freshmen.

Two exercises per week. 2d S.

65. Special Drawing. Prof. Putnam.

A continuation of Drawings 62, including the study of cam design. For Mechanic Arts Juniors. *One exercise per week. 1st S.*

66. Special Drawing. Prof. Putnam.

A continuation of Drawing 65, including the study of gear design. For Mechanic Arts Juniors. *Two exercises per week. 2d S.*

71. Special Drawing. Prof. Putnam.

A continuation of Drawing 66, including a systematic study of the correlation of Shop and Drawing Courses. For Mechanic Arts Seniors.

One exercise per week. 1st S.

72. Special Drawing. Prof. Putnam.

A continuation of Drawing 71, including a systematic study of shop mathematics as used in the drafting room. For Mechanic Arts Seniors.

Two exercises per week. 2d S.

ECONOMICS.

PROF. SMITH.

1. Elementary Economics.

A survey of the general field of economics, including such fundamentals as value, price, consumption, production, exchange, rent, wages. interest, profits, money, and international trade.

Two sections: one for Agricultural and Engineering Seniors; the other for Arts and Science and Mechanic Arts Sophomores.

Three exercises per week. 1st S.

2. Commercial Geography.

A study of the commodities of commerce; the factors which influence their production; the regions of their productions; markets and exchange facilities. For Arts and Science Freshmen and Sophomores.

Three exercises per week. 2d S.

4. Money and Banking.

A study of the principles of money; credit; bimetallism; the national banking systems of the United States and foreign countries; trust companies. Elective for Arts and Science Juniors and Seniors and Agricultural Seniors.

Economics 4 and 6 are given in alternate years. Economics 4 will be given in 1914–1915.

Prerequisite—Economics 1. *Three exercises per week. 2d S,*

5. Labor Problems.

A study of such subjects as labor organizations; strikes and lockouts; the open and closed shop; labor legislation. Elective for Arts and Science Juniors and Seniors and Agricultural Seniors.

Economics 5 and 7 are given in alternate years. Economics 5 will be offered in 1914–1915.

Prerequisite–Economics 1. *Three exercises per week. 1st S.*

6. Public Finance and Taxation.

A study of public revenues and expenditures with special attention to problems of taxation. Elective for Arts and Science Juniors and Seniors and Agricultural Seniors.

Economics 4 and 6 are given in alternate years. Economics 6 will be given in 1913–1914.

Prerequisite—Economics 1. *Three exercises per week. 2d S.*

7. Socialism.

A study of historical types of socialism; the economic theories of Karl Marx; the causes which lie back of the present socialist movement, together with its aims and propaganda. Elective for Arts and Science Juniors and Seniors and Agricultural Seniors. Economics 5 and 7 are given in alternate years. Economics 7 will be offered in 1913–1914.

Prerequisite—Economics 1. *Three exercises per week. 1st S.*

8. Agricultural Economics.

A consideration of the three factors of production, land, labor and capital, as related to agriculture. Among other rural problems studied will be shifts in population, the income of the farmer, markets, speculation, and co-operation. Required of Agricultural Seniors. Elective for Arts and Science Juniors and Seniors.

Prerequisite—Economics 1. *Three exercises per week. 2d S.*

9. Corporation Finance.

A study of the methods used to finance corporations; the various types of stocks and bonds; underwriting; government regulation of corporations. Elective for Arts and Science Juniors and Seniors and Agricultural Seniors.

Prerequisite—Economics 1. *Three exercises per week. 1st S.*

11. Economic Problems of the Home.

Among the subjects studied will be the following: the effect of modern industry upon industry of the home; economic and legal position of woman in the family and in society; laws regulating food supplies; marketing problems. For Junior and Senior women.

Two exercises per week. 1st S.

ELECTRICAL ENGINEERING.

PROF. HEWITT, ASST. PROF. HITCHCOCK.

1. Dynamo Electric Machinery. Prof. Hewitt.

This course includes a general study of the various electrical quantities such as electromotive force, current, resistance, permeability of iron; the use of standard measuring instruments; direct and alternating current dynamos and motors including elementary theory. A large number of practical problems illustrate the applications of the above. One exercise per week is devoted to laboratory experiments illustrating the practical application of theory. For Electrical and Mechanical Juniors.

Prerequisites—Physics 52 and Mathematics 56.

Four exercises per week. 1st S.

2. Dynamo Electric Machinery. Prof. Hitchcock.

A continuation of Course 1. A study of electrical measuring instruments, cells, batteries, electrolysis, electroplating, electrotyping, the elements of photometry and electric illumination, inductance, capacity, and elementary alternating currents. One exercise per week is devoted to laboratory experiments illustrating the practical application of theory. For Electrical and Mechanical Juniors.

Prerequisite—Electrical Engineering 1.

Four exercises per week. 2d S.

3. Telegraph and Telephone. Prof. Hitchcock.

A study of the acoustic and electrical principles of telephony, transmitting and receiving apparatus, magneto and common-battery switchboards and accessories, selective party-line systems, intercommunicating systems, overhead and underground construction, phantom, simplex, and composite circuits, transpositions, etc. The principles of telegraphy, sounders, repeaters, etc. Wireless telegraphy and telephony. Automatic devices, electric signaling for purposes of alarms, railroads, etc. For Electrical Seniors. *One exercise per week. 1st S.*

6. Application of Electricity to Agriculture. Prof. Hewitt.

Arranged for and adapted to students taking agriculture. The course consists of a general study of the electric dynamo and motor, method of connecting same to the supply circuit and the care and operation of each; a general study of simple problems in transmission, methods of wiring for electric power and lighting; the telephone including the general principles upon which it operates and different systems of installation; electric bell wiring and signaling apparatus; simple water power developments and equipments; electrical utensils for domestic use, etc. This course consists of two lectures and one laboratory period per week.

Open only to Seniors in Agriculture. Three exercises per week. 2d S.

7. History of Electrical Engineering. Prof. Hewitt.

A series of lectures giving a brief history of electrical engineering and outlining some of the advantages of this profession. This series of lectures has been planned in order to help a student in the choice of his course after his Freshman year. For Electrical and Mechanical Freshmen. *One exercise per week. 1st S.*

9. Industrial Electricity. Prof. Hewitt, Prof. Hitchcock.

Arranged for and adapted to students taking the Mechanic Arts Course. Open only to Seniors in the Mechanic Arts Course.
Three exercises per week. 1st S.

11. Electrical Engineering Practice. Prof. Hitchcock.

A study of the properties of periodic curves, the effects of inductance and capacity, the use of complex quantities, and a more detailed study of generators, motors, transformers, converters, and other electrical apparatus. For Electrical Seniors.
Prerequisite—Electrical Engineering 2.
Four exercises per week. 1st S.

12. Electrical Engineering Practice. Prof. Hewitt.

A continuation and completion of Course 11. Hydro-electric developments including the design of reinforced concrete dams and power houses and the general subject of water-power engineering; high tension power transmission; design of transmission lines and distributing systems; selection of apparatus for generating stations and distributing systems; lightning protection. For Electrical Seniors.
Prerequisite—Electrical Engineering 11.
Four exercises per week. 2d S.

14. Electric Railways. Prof. Hitchcock.

The practicability of construction from an economic standpoint; determination of the size, type, and seating capacity of cars; track location; train schedules; methods of control; train resistance; speed-time and current-time curves; selection of motors; the feeder system; electrolysis; power station and substation location; storage batteries; electric track switches; etc. Illustrated by problems. For Electrical Seniors. *Two exercises per week. 2d S.*

15. Electrical Laboratory. Prof. Hewitt, Prof. Hitchcock.

An advanced series of experiments. A written report will be required for which one additional credit hour will be given. For Electrical Seniors. *Three exercises per week. 1st S.*

16. Electrical Laboratory. Prof. Hewitt, Prof. Hitchcock.

A continuation of Course 15, with experiments of a more advanced nature. A written report will be required for which one additional credit hour will be given. For Electrical Seniors.

Three exercises per week. 2d S.

18. Thesis. Prof. Hewitt, Prof. Hitchcock.

A deposit of fifteen dollars to cover any damage done to instruments, apparatus, etc., is required in this course. Any unexpended balance is refunded at the close of the college year. Where apparatus is constructed as a part of a thesis, it shall remain the property of the department. Optional with head of department. For Electrical Seniors.

Three exercises per week. 2d S.

19. Dynamo Electric Machinery. Prof. Hitchcock.

A continuation of Course 2, but arranged to meet the requirements of students in Mechanical Engineering. This course is not so advanced as Course 11, but covers the same subjects in a more elementary manner. For Mechanical Seniors.

Prerequisite—Electrical Engineering 2.

Three exercises per week. 1st S.

21. Industrial Electricity. Prof. Hewitt.

A careful study of the principles and methods employed in electrical measurements; resistance of wire and batteries; current measurement by ammeters and electrolysis; the use of electrical measuring instruments; a series of laboratory experiments specially arranged to meet the requirements of chemical engineers. A brief study will be made of the dynamo, motor, transformer, primary and secondary batteries, arc and incandescent lamps and the general principles of electrical distribution. Experiments in electrolysis, electrical furnaces, reduction of metals, etc., are provided. For Chemical Seniors.

Three exercises per week. 1st S.

22. Industrial Electricity. Prof. Hewitt.

A continuation of Course 21, but more advanced in nature. For Chemical Seniors.

Prerequisite—Electrical Engineering 21.

Three exercises per week. 2d S.

24. Design of Electrical Machinery. Prof. Hitchcock.

A study of the design of the more important electrical machines, including the calculation of the dimensions of the machine, both electrical

and mechanical, and the predetermination of its performance from the dimensions. For Electrical Seniors.

Prerequisite—Electrical Engineering 11.

Two exercises per week. 2d S.

26. Illuminating Engineering. Prof. Hitchcock.

A theoretical discussion of the principles of illumination and the application of these principles to concrete examples. For Electrical Seniors who do not take Electrical Engineering 18. Elective for other Electrical Seniors. *Two exercises per week. 2d S.*

28. Contracts and Specifications. Prof. Hewitt.

The laws and forms of engineering contracts; standard specifications for materials of construction and apparatus. For Mechanical and Electrical Seniors. *Two exercises per week. 2d S.*

ENGLISH.

PROF. RICHARDS, PROF. SCOTT, MISS HODGKINS. MR. SCUDDER.

51. English Composition and Rhetoric. Mr. Scudder.

The purpose of this course is to assist the student in learning how to express his ideas in clear, correct English. Material for daily and weekly themes is taken from the actual college life of the individual student, from current events of public interest, and from the student's outside reading. Eight exercises are devoted to library practice under the direction of the college librarian. For all Freshmen.

Three exercises per week. 1st S.

52. English Composition and Rhetoric. Mr. Scudder.

A continuation of English 51.

Prerequisite—English 51. *Three exercises per week. 2d S.*

53. Advanced Composition and Literary Criticism. Prof. Richards.

This is a course in practical English composition, in which the various forms of writing, such as newspaper reporting, book reviewing, business letters, the essay and the short story, are studied.

To supplement these exercises the student is required to read and criticise intelligently the writings of at least one noted prose writer and one poet, embodying the results of such study in a carefully prepared essay at the close of the semester. For Mechanic Arts Sophomores. Elective for Arts and Science Sophomores and Juniors.

Prerequisites—English 51 and 52. *Three exercises per week. 1st S*

54. Introduction to English Literature. Prof. Richards.

This course is designed to give a general survey of English literature from the ninth to the nineteenth century. To one who intends to teach

English it is of fundamental importance. Lectures, recitations and outside reading constitute the work of the semester. Elective for Freshmen, Sophomores and Juniors. *Three exercises per week. 2d S.*

***55. The English Novel.** Prof. Richards.

The historical development of the English novel and the chief characteristics of modern fiction are studied in this course. Lectures, extensive outside reading and occasional dramatic representations of scenes from various novels constitute the work of the semester. Elective for Arts and Science and Mechanic Arts Juniors and Seniors.
Prerequisites—English 51 and 52. Three exercises per week. 1st S.

56. Argumentation and Debating. Prof. Richards.

This course offers training in the fundamental principles of oral debate and written argumentation, it acquaints the student with the laws of parliamentary procedure, and it introduces him to the rules and customs of state and national legislatures. An essential part of the course —in some respects the most valuable feature—is the practice in formal and extemporary debate, such debates being held at least once a week throughout the semester. For Agricultural and Electrical Seniors. Elective for other students. *Three exercises per week. 2d S.*

***57. Modern English Poetry.** Prof. Richards.

In this course a study is made of the great poems of English literature written between 1790 and 1890. While special attention is given to the poetry of Wordsworth, Tennyson and Browning, considerable outside reading is required in the works of Shelley, Keats, Rossetti, Arnold and other poets of the nineteenth century. Elective for Arts and Science and Mechanic Arts Juniors and Seniors.
Prerequisites—English 51 and 52. Three exercises per week. 1st S.

58. The English Drama, 1585–1625. Prof. Richards.

Certain plays of Marlowe, Shakespeare, Jonson, Webster, Beaumont and Fletcher will be read and discussed in class. Elective for Arts and Science Juniors and Seniors.
Prerequisites—English 51 and 52. Three exercises per week. 2d S.

60. American Literature. Prof. Scott.

This course consists of lectures and extensive outside reading. For Mechanic Arts Seniors. Elective for Arts and Science and Agricultural Seniors. *Four exercises per week. 2d S.*

*English 55 and 57 are given in alternate years. English 57 is given in 1914–1915.

***62. Shakespeare's Plays.** Prof. Richards.

A study of all of Shakespeare's plays. Recitations and occasional dramatic representations of famous scenes. A large amount of reading required. Elective for Arts and Science Juniors and Seniors.

Prerequisites—English 51 and 52. *Three exercises per week.* *2d S.*

63. Writing for Publication. Mr. Scudder.

A practical course in the preparation of articles for the newspapers and magazines. The student is taught to select the essential and present it tellingly. It is offered for all those whose vocation will demand frequent writing for publication, and as a preparation in part for those who intend to take up newspaper work after graduation. This is not a course covering the entire field of journalism, but the student will be instructed in the duties of a reporter and be given constant practice in writing news stories. Elective for Sophomores and Juniors who have no conditions in the English of Freshman year.

Three exercises per week. *1st S.*

64. A Continuation of English 63. *Three exercises per week.* *2d S.*

ENTOMOLOGY.

PROF. O'KANE, MR. HADLEY.

1. Principles of Economic Entomology.

The relation of the structure and classifications of insects to methods of insect control. The preparation and application of insecticides. Spray machinery and appliances. For Agricultural Juniors. Elective for Arts and Science Sophomores, Juniors and Seniors.

Three exercises per week. *1st S.*

2. Applied Economic Entomology.

The application of methods of insect control to typical injurious species. Studies in the life histories and habits of important insect pests of orchard, garden and field crops. Elective for Agricultural Juniors and for Arts and Science Sophomores, Juniors and Seniors.

Prerequisite—Entomology 1. *Three exercises per week.* *2d S.*

3. Insects of Domestic Animals.

The insect enemies of domestic live stock; their life histories, habits and means of control. Adapted especially for students in Animal Husbandry. Elective for Agricultural Seniors and for Arts and Science Juniors and Seniors.

Prerequisite—Entomology 1. *Two exercises per week.* *1st S.*

* English 58 and 62 are given in alternate years. English 62 is offered in 1914–1915.

4. Household Insects. Medical Entomology.

The life histories, habits and means of control of insects of the household and of stored products. The relation of insects to disease. Adapted especially for students in Home Economics. Elective for Arts and Science Sophomores, Juniors and Seniors, and for Agricultural Juniors and Seniors. *Two exercises per week. 2d S.*

5. Advanced Economic Entomology.

Detailed studies of problems involved in applied entomology. The literature of economic entomology. Investigational methods. Practice in arranging projects. Original investigations in the life history and habits of one or more injurious species. Adapted for advanced students. Elective for Agricultural Seniors and for Arts and Science Juniors and Seniors. Credit hours by arrangement. *1st S.*

6. Advanced Economic Entomology.

Continuation of Course 5.

Prerequisites—Entomology 1, 2 and 5.

Two to four exercises per week. 2d S.

FORESTRY.

PROF. FOSTER.

51. Principles of Forestry.

This course is intended to give the student a general knowledge of forestry; relation of forests to soil, moisture, light and climatic conditions; the important systems of treating woodlands practised in Europe and the United States; the habits of important economic timber trees and the character and uses of these woods; the preparation of forest maps and working plans, including rough estimates of standing timber and the rate of growth of different stands; the artificial regeneration of forests by seeding and planting; forest fires; the forest regions of the United States; the practice of forestry by the government and states. For all Agricultural Juniors except those in the Forestry Course. Elective for other students, except those taking Forestry 55. *Three exercises per week. 1st S.*

52. Silviculture.

The establishment of forests through artificial regeneration; value of different species; seed collecting; testing and storage; nursery work; direct seeding; planting; care of plantations; cost of establishing plantations; planting plans. Supplemented by actual nursery and planting work. For Forestry Juniors. Elective for other students.

Three exercises per week. 2d S.

53. Dendrology.

A study of the habits, distribution and characteristics of the native trees and important introduced trees of the Northeastern States, in both summer and winter conditions, and with particular reference to the prominent and constant features which lead to ready identification; and a general study of the important timber trees of the United States, including the structure of their woods. For Forestry and Mechanic Arts Juniors. Elective for other students.

Four exercises per week. 1st S.

54. Forest Mensuration.

Methods of determining the contents and growth of individual trees and of whole forests by different units; use of log rules and the measurement of logs and felled trees; the measurement of standing trees; methods of timber estimating; study of growth in diameter; height, and volume; construction and use of volume and yield tables. This course calls for the use of forest instruments and actual practice in measuring trees and whole stands. For Forestry Juniors. Elective for other students. *Three exercises per week. 2d S.*

55. Silviculture.

A study of the life history of trees; the relation of the different species to light, moisture, soil, temperature and to each other in the forest; reproduction of trees, form and character of stands; the origin and determination of forest types; forest maps; relation of forests to stream-flow; forest descriptions; the improvement of the forest through use and proper treatment; the various systems of cutting and reproducing forests by natural means as practised in Europe and the United States, supplemented by frequent woods practice and demonstrations. For Forestry Juniors. Elective for other students, except those taking Forestry 51. *Five exercises per week. 1st S.*

56. Forest Management.

The economic principles underlying the management of forests; the calculation of present and future values of forest property based on productive power; financial considerations of forest management; taxation of forest land; preparation of working plans in Europe, India, and the United States. Includes collateral reading, writing on forestry subjects and discussions. For Forestry Seniors.

Prerequisites—Forestry 52, 53, 54, 55, 57, and 59.

Four exercises per week. 2d S.

57. Forest Protection.

Consideration of practical measures for the protection of forests from fire, insects, fungous diseases, grazing, trespass, and destructive

lumbering; and an examination of the federal and state laws relating to forest interests. For Forestry Seniors.

Prerequisites—Forestry 52, 53, 54, and 55.

Two exercises per week. 1st S.

58. Advanced Forestry.

Elective for Forestry Seniors.

Prerequisites—Forestry 52, 53, 54, 55, 57, and 59.

Three exercises per week. 2d S.

59. Practice of Forestry.

Development and present status of forestry in different countries; the work of the federal government and its management of the national forests; state forest policies; the lumber industry in the United States; the application of forestry to different regions. For Forestry Seniors.

Prerequisites—Forestry 52, 53, 54, and 55.

Three exercises per week. 1st S.

60. Forest Utilization.

Advanced elective course for Mechanic Arts Juniors or Seniors. Work to be arranged to meet the needs of individual students.

Prerequisite—Forestry 53. *Three exercises per week. 2d S.*

61. Advanced Forestry.

Work to be arranged according to the needs of individual students. Elective for Forestry Seniors.

Prerequisites—Forestry 52, 53, 54, and 55.

Three exercises per week. 1st S.

FRENCH.

PROF. WHORISKEY, ASST. PROF. WHITMAN, MISS PETTEE.

1. Elementary French, Miss Pettee.

Elements of French Grammar. Reading of simple stories; conversation and dictation. Elective for Arts and Science students.

Three exercises per week. 1st S.

2. A continuation of French 1.

Elective for Arts and Science students.

Three exercises per week. 2d S.

3. French Prose. Prof. Whitman.

Reading and translation; composition. Elective for Arts and Science Sophomores. Freshmen who have offered French for admission are allowed to take French 3 and 4.

Prerequisite—French 2. *Three exercises per week. 1st S.*

4. A continuation of French 3.

Prerequisite—French 3. *Three exercises per week. 2d S.*

***5. French Literature of the Nineteenth Century.** Prof. Whitman.

Selections from Hugo, Balzac, Sand, Dumas père, Daudet, Gautier. Composition. Elective for Arts and Science students.

Prerequisite—French 4. *Three exercises per week. 1st S.*

***6. A continuation of French 5.**

Elective for Arts and Science students.

Prerequisite—French 5. *Three exercises per week. 2d S.*

***7. French Literature of the Seventeenth Century.** Prof. Whitman.

Corneille; Racine; Molière; Bossuet; Boileau; Mme. de Sévigné; La Fontaine. Composition. Elective for Arts and Science students.

Prerequisite—French 4. *Three exercises per week. 1st S.*

***8. A continuation of French 7.**

Elective for Arts and Science students.

Prerequisite—French 7. *Three exercises per week. 2d S.*

GEOLOGY.

PROF. JACKSON, PROF. JAMES.

51. Elementary Geology.

The elements of geology. Special attention is given to local geology and excursions are made to various points of interest in the vicinity. For Agricultural Juniors. Elective for Mechanic Arts Juniors and Arts and Science Juniors and Seniors.

Three exercises per week. 1st S.

52. Historical Geology.

The development of the continents of the earth and the evolution and distribution of the animal and plant forms from the earliest times to the present. Recitations, lectures and laboratory work. Elective for Agricultural and Arts and Science Seniors.

Prerequisites—Zoölogy 51 and Geology 51.

Three exercises per week. 2d S.

54. Mineralogy.

A short course in blowpipe analysis, followed by laboratory practice in the determination and study of minerals, with special reference to their economic value. For Chemical Juniors. Elective for Agricultural and Arts and Science Juniors.

Prerequisites—Chemistry 51 and 52. *Two exercises per week. 2d S.*

* French 5 and 6 are to be given in 1914–1915 and in alternate years with French 7 and 8.

GERMAN.

PROF. WHORISKEY, ASST. PROF. WHITMAN.

1. Elementary German. Prof. Whoriskey, Prof. Whitman.

Elements of German Grammar. Reading of simple stories; conversation; singing of German folk-songs. For Agricultural and Chemical Engineering Freshmen who have not offered German for admission. Elective for others. *Three exercises per week. 1st S.*

2. Elementary German.

A continuation of German 1. For Agricultural and Chemical Engineering Freshmen who have not offered German for admission. Elective for others. *Three exercises per week. 2d S.*

3. German Prose. Prof. Whoriskey.

Reading and translation. For Chemical Engineering Sophomores. Elective for others. Freshmen who have offered German for admission are allowed to take German 3 and 4. *Three exercises per week. 1st S.*

4. German Prose.

A continuation of German 3. Scientific German for Chemical Engineering Sophomores. Elective for others.
Prerequisite—German 3. *Three exercises per week. 2d S.*

***5. Goethe.** Prof. Whoriskey.

His Life and Works. Elective for Arts and Science students.
Prerequisite—German 4. *Three exercises per week. 1st S.*

***6. Goethe.**

A continuation of German 5. Elective for Arts and Science students.
Prerequisite—German 5. *Three exercises per week. 2d S.*

***7. Schiller.** Prof. Whoriskey.

His Life and Works. Elective for Arts and Science students.
Prerequisite—German 4. *Three exercises per week. 1st S.*

***8. Schiller.**

A continuation of German 7. Elective for Arts and Science students.
Prerequisite—German 7. *Three exercises per week. 2d S.*

†9. German Composition and Conversation. Prof. Whoriskey.

Elective for Arts and Science students.
Three exercises per week. 1st S.

*German 5 and 6 are to be given in 1914–1915. German 7 and 8 are to be given in 1915–1916, and German 13 and 14 are to be given in 1916–1917.

†German 9 and 10 are to be given in 1914–1915 and in alternate years with German 11 and 12.

***10. A continua tion of German 9.** *Three exercises per week. 2d S.*

***11. German Composition and Conversation.** Prof. Whoriskey.
Elective. *Three exercises per week. 1st S.*

***12. A continuation of German 11.**
Elective. *Three exercises per week. 2d S.*

†13. Sudermann. Prof. Whoriskey.
His Life and Principal Works. Elective for Arts and Science students.
Prerequisite—German 4. *Three exercises per week. 1st S.*

†14. Sudermann and His Contemporaries.
A continuation of German 13.
Prerequisite—German 13. *Three exercises per week. 2d S.*

HISTORY.

PROF. SCOTT, PROF. SMITH.

In the courses in History an important place is given to historical reading carried on in the reference room. In some cases a considerable part of the work is written.

1. History of Europe from 476 to 1492.
Recitations and collateral reading. For Mechanic Arts Juniors. Elective for Arts and Science Freshmen.
Three exercises per week. 1st S.

2. History of Europe from 1492 to 1715.
Recitations and collateral reading. For Mechanic Arts Juniors. Elective for Arts and Science Freshmen.
Three exercises per week. 2d S.

3. History of Europe from 1715 to 1815.
Recitations and collateral reading. Elective for Arts and Science Sophomores.
Prerequisites—History 1. *Three exercises per week. 1st S.*

4. History of Europe since 1815.
Recitations and collateral reading. Elective for Arts and Science Sophomores.
Prerequisite—History 2 or History 3.
Three exercises per week. 2d S.

* German 9 and 10 are to be given in 1914–1915 and in alternate years with German 11 and 12.

† German 5 and 6 are to be given in 1914–1915. German 7 and 8 are to be given in 1915–1916, and German 13 and 14 are to be given in 1916–1917.

5. American History to 1801.

Elective for Arts and Science Juniors.

Three exercises per week. 1st S.

6. Political and Constitutional History of the United States from 1801 to 1860.

Elective for Arts and Science Juniors and Mechanical Arts Juniors and Seniors. *Three exercises per week. 2d S.*

7. Political and Constitutional History of the United States since 1860.

Elective for Arts and Science and Mechanic Arts Seniors.

Three exercises per week. 1st S.

HOME ECONOMICS.

PROFESSOR THOMPSON.

1. Personal Hygiene.

A study of the laws of health and the means of preserving and improving the physical development and efficiency of the individual, together with lectures and discussions upon the right living, the control of the physical and mental environment, individual responsibility for race progress, economic and ethical aspects of hygiene. Required of all women Freshmen. *One exercise per week. 1st S.*

2. Household Methods and Management.

Lectures and discussions on household equipment for heating, lighting, and ventilating, drainage and plumbing, sanitary and economical methods of work, labor saving devices, domestic laundering, table service, marketing and cost accounting, plans for parties and entertainment of guests, social forms and usages. For Home Economics Freshmen. *Three exercises per week. 2d S.*

3. Food Economics.

The study of food products in their marketable and manufactured forms; factors affecting cost of food materials; cost of food preparation and kitchen equipment. In the laboratory accompanying this course emphasis is placed upon neatness and accuracy in work and exact systems of weights and measures are taught. For Home Economics Freshmen. *Three exercises per week. 1st S.*

5. Clothing.

The clothing textiles are studied as to their structure, properties, and economic and hygienic values; study of clothing manufacture. Prac-

tice is given in selection, care and repair of clothing, and in garment making. Elective or may be offered for Course 3 by Home Economics Freshmen. *Three exercises per week. 1st S.*

7. Foods.

This course takes up the chemical composition and nutritive value of foods. The foodstuffs are considered in regard to their digestibility, their available nutrients, and the changes effected by the application of heat. Laboratory practice in the chemistry and cookery of foods. For Home Economics Sophomores.

Prerequisite—Chemistry 55. *Three exercises per week. 1st S.*

8. Foods.

A continuation of Course 7, together with discussions of dietaries and serving of meals. For Home Economics Sophomores.

Prerequisite—Course 7. *Four exercises per week. 2d S.*

10. Household Art and Design.

A study of the primitive industries; ancient and modern hand craft; art needle work; color and design in house furnishings. For Home Economics Sophomores. *Two exercises per week. 2d S.*

11. Nutrition.

A detailed study of the digestive processes with special attention to the action of enzymes and hormones. The organic foodstuffs are discussed with regard to their chemical structure, the products obtained by their hydrolytic cleavage, and their specific dynamic action in the body. Other topics taken up are: protein metabolism and the protein requirement; the fuel value of food and the energy requirement of the body; influence of food consumption upon metabolism; quantitative relation between work performed and total metabolism; methods of investigation employed in the study of nutrition; comparisons of feeding and fasting experiments; the inorganic foodstuffs and the function of the individual ash constituents of the diet; food habits and dietary standards; food economy. For Home Economics Juniors.

Prerequisites—Chemistry 57, Home Economics 7 and 8, Zoölogy 57. *Three exercises per week. 1st S.*

12. Dietetics.

Problems in dietary calculations; standard portions of food materials; application of the principles of human nutrition in the adaptation of diet to varying physiological, economic and social conditions; nutritional diseases and abnormalities; food therapy. For Home Economics Juniors.

Prerequisite—Home Economics 11. Three exercises per week. 2d S.

13. Home Decoration.

Wall and floor finishes; selection of home furnishings; space and color values; estimations of costs and comparisons of sanitary and artistic furnishings. For Home Economics Juniors.

Prerequisites—Drawing 51 and Home Economics 10.

Two exercises per week. 1st S.

15. Textiles.

Microscopic and chemical study of fabrics and fibres used in textile manufacture; modern processes of dyeing, spinning and weaving. Elective for Juniors.

Prerequisites—Chemistry 55, 56, and 57, and Home Economics 10.

Three exercises per week. 1st S.

16. Home Nursing.

Care of the sickroom and patient; observation and recording of symptoms; administration of medicines; treatment of injuries and emergencies; hygiene of infectious diseases; use of antiseptics and disinfectants. For Home Economics Juniors.

Prerequisites—Chemistry 55 and 56, and Botany 55.

Two exercises per week. 2d S.

18. History of Costume.

Comparison of primitive and historic costumes with modern dress; study of designs and conventions of national modes. Elective for Juniors. *Two exercises per week. 2d S.*

19. Home Administration.

Organization of the household; standards of living; operating expenses; apportionment of income; estimation of budgets; elective expenditures; domestic service; coöperative housekeeping; social responsibilities. For Home Economics Seniors.

Two exercises per week. 1st S.

20. Humanics.

Human phylogenesis; influence of heredity upon natural tendencies and biologic efficiency of the individual; development through infancy, childhood and adolescence; sex education; social hygiene. For Home Economics Seniors.

Prerequisite—Senior standing. Two exercises per week. 2d S.

21. Seminar.

Research problem in nutrition, food chemistry, experimental cookery, household economics or textiles. Elective for Home Ecomonics Seniors. *Three exercises per week. 1st S.*

22. Seminar.

Investigation in problem assigned in Course 21. Elective for Home Economics Seniors. *Three exercises per week. 2d S.*

23. Teaching of Domestic Art.

This course considers the arrangement and presentation of domestic art in the elementary and secondary schools; outlines of lessons; development of courses; selection of equipment. Elective for Seniors who have elected textiles and clothing.

Three exercises per week. 1st S.

24. Teaching of Domestic Science.

Course in teaching domestic science similar to Course 23. Elective for Home Economics Seniors. *Three exercises per week. 2d S.*

HORTICULTURE.

PROF. GOURLEY, ASST. PROF. WOLFF, MR. LUMSDEN.

52. Olericulture.

Lectures and recitations upon the culture, classification and identification of vegetables. In this general study of market gardening is included the construction and management of hot beds and cold frames, starting early vegetables under glass, planting in the open garden, methods of culture, systems of irrigation, a study of garden implements and the marketing of vegetables. For Agricultural Sophomores. *Two exercises per week. 2d S.*

53. Greenhouse Construction and Management.

Lectures, recitations and laboratory work. This course aims to familiarize the student with modern methods of greenhouse work and the more important plants grown under glass. Sorts, varieties, culture, marketing, and enemies of greenhouse plants are studied. Each student is required to do practical work in propagating, potting, watering, and ventilating. A study is made of the history and development of different types of greenhouses, including methods of heating and general management. Required in Horticultural Course, Junior year. Elective in other Agricultural Courses.

Three exercises per week. 1st S.

54. Practical Pomology.

A study of the fundamental problems of fruit growing, such as location, choice of site, kind and adaptability of soil for fruit growing, soil management, planting of orchards, pruning, sprays and spraying, thinning, harvesting and marketing. Lectures and laboratory work. For Agricultural Sophomores. *Three exercises per week. 2d S.*

NOTE.—The College has several hundred fruit trees which are available for the students in studying orchard operations. All types of spray machinery from the knapsack to the power sprayer are used in class work.

55. Systematic Pomology and Commercial Orcharding.

The first eight weeks of the semester are devoted to a study of the leading varieties of fruits and their adaptations, with special reference to New England conditions. During the remainder of the semester this course deals with the management of commercial orchards, problems of marketing, packing, transportation and coöperation. Special study is given to the experimental data on maintaining soil fertility in the orchard and on other fundamental factors in orchard management. In the laboratory special instruction is given to the packing of apples for market and judging fruit. Lectures, reference reading and laboratory work. Required in Horticultural Course, Senior year.

Four exercises per week. 1st S.

56. Landscape Gardening.

A study of the principles involved in ornamental and landscape gardening. Special attention is given to the beautifying of home surroundings. Laboratory work consists in landscape design and practice in laying out and planting home and public grounds. Required in Horticultural Course, Junior year. Elective in other Agricultural Courses. *Three exercises per week. 2d S.*

57. Evolution and Improvement of Plants.

The applications of the principles of evolution to the improvement of plants. Variation, selection and heredity as applied to the problems of plant breeding in agricultural practice. Required in Horticultural and General Agricultural Courses, Senior year. Elective in other Agricultural Courses.

Prerequisites—Botany 51 and 52. Two exercises per week. 1st S.

58. Nursery Management.

A study of the methods of propagation and the care of trees, shrubs and perennial plants in the nursery. Lectures, reference readings and practice. Required in Horticultural Course, Junior year. Elective in other Agricultural Courses.

Three exercises per week. 2d S.

60. Floriculture.

A special study of the classification, history and development of the flowers and plants grown commercially and about the home, together with instruction and practice in their propagation and culture. Required in Horticultural Course, Junior year. Elective for others.

Prerequisites—Botany 51 and 52. Two exercises per week. 2d S.

61. Commercial Floriculture.

A study of the growing of cut flowers and decorative plants. Lectures and practical exercises in the greenhouse. Elective for Agricultural Seniors.

Prerequisite—Horticulture 60. Three exercises per week. 1st S.

62. Horticultural Seminar.

A review of the important horticultural literature and methods of investigational work. Required in Horticultural Course, Senior year. Elective in other Agricultural Courses.

One exercise per week. 2d S.

64. Vegetable Gardening Under Glass.

A study of the methods of growing market vegetables in greenhouses. Lectures and practical exercises in the greenhouse. Elective for Agricultural Seniors.

Prerequisite—Horticulture 52. *Two credit hours. 2d S.*

65. Advanced Horticulture.

Special work in horticulture can be taken by special arrangement with the head of the department. Prerequisites will depend on the work taken. Advanced work in olericulture, including a course in canning vegetables and by-products from the orchard, will be offered. Elective for Agricultural Seniors.

Two to five exercises per week. Time to be arranged. 1st S.

66. Advanced Horticulture.

A continuation of Horticulture 65. Special work in horticulture. Elective for Agricultural Seniors. Time and credit to be arranged.

Two to five exercises per week. 2d S.

LATIN.

PROF. WHORISKEY, ASST. PROF. WHITMAN.

1. Livy (Book I). Prof. Whitman.

Elective for Arts and Science students who have offered Advanced Latin for entrance. *Three exercises per week. 1st S.*

2. Horace (Odes and Epodes).

Prerequisite—Latin 1. *Three exercises per week. 2d S.*

***3. Terence (Andria and Phormio).**

Elective for Arts and Science students.

Prerequisite—Latin 2. *Three exercises per week. 1st S.*

***4. Tacitus (Annals).**

Elective for Arts and Science students.

Prerequisite—Latin 3. *Three exercises per week. 2d S.*

*Not to be given in 1914–1915.

MACHINE DESIGN.

PROF. PUTNAM, MR. LATON.

52. Kinematics of Machinery. Prof. Putnam.

The study of machine parts with respect to their forms, motions, modes of connection, and methods of manufacture. For Electrical and Mechanical Sophomores.

Prerequisite—Mathematics 51. *Two exercises per week. 2d S.*

53. Kinematics of Machinery. Prof. Putnam.

The application of Machine Design 52 to practical problems worked out in the drafting room. For Electrical and Mechanical Juniors.

Prerequisites—Mathematics 51 and Machine Design 52.

Two exercises per week. 1st S.

54. Kinematics of Steam Machinery. Prof. Putnam.

A continuation of Machine Design 53, including the theory of the slide valve. For Electrical and Mechanical Juniors.

Prerequisites—Mathematics 51 and Machine Design 53.

Two exercises per week. 2d S.

56. Mechanism. Prof. Putnam.

A systematic study of the motions and forms of the various mechanisms occurring in machines and the manner of supporting and guiding the parts, together with the study of the mechanisms found in modern American machine tools and in mining machinery. For Chemical Seniors. *Three exercises per week. 2d S.*

MATHEMATICS.

PROF. PETTEE, ASSOC. PROF. MOORE, ASST.PROF. STECK.

51. Algebra and Trigonometry. Prof. Moore, Prof. Steck.

The first half of the semester is devoted to a brief review of fundamental principles, a more advanced presentation of linear and quadratic equations, followed by an introduction to the theory of equations, determinants, variation and logarithms. The second half of the semester is devoted to trigonometry. For Engineering, Agricultural and Mechanic Arts Freshmen. Elective for Arts and Science Freshmen.

Four exercises per week. 1st S.

52. Analytic Geometry. Prof. Moore, Prof. Steck.

This course presents the elements of plane and solid analytic geometry; Cartesian and polar coördinates, the straight line, circle, and the conic sections; the derivative and its elementary applications; meth-

ods of analysis as illustrated by loci problems. For Engineering and Mechanic Arts Freshmen. Elective for Arts and Science Freshmen.
Prerequisite—Mathematics 51. *Four exercises per week. 2d S.*

53. Solid Geometry. Prof. Steck.

The elements of the geometry of three dimensions. For Mechanic Arts Freshmen and for Engineering Freshmen entering without the subject. Elective for Agricultural and Arts and Science Freshmen.
Two exercises per week. 1st S.

54. Surveying. Prof. Pettee, Prof. Moore, Prof. Steck.

Lectures, recitations, field work and plotting; surveying with chain, compass, transit, sextant and plane table; special attention to adjustments, care and proper methods of using these instruments; the methods of determining areas; the use of the solar transit for the determination of the true meridian; levelling for profiles and contours; computing from field notes taken in connection with the course. For Agricultural and Mechanic Arts Freshmen. Elective for Arts and Science Freshmen. *Four exercises per week, last half of semester. 2d S.*

55. Calculus. Prof. Moore, Prof. Steck.

Differentiation of algebraic and transcendental functions with applications to physical and allied problems. The simple methods of integration. For Engineering Sophomores. Elective for Arts and Science Sophomores.
Prerequisite—Mathematics 52. *Five exercises per week. 1st S.*

56. Calculus. Prof. Moore, Prof. Steck.

A continuation of Course 55.
Prerequisite—Mathematics 55. *Three exercises per week. 2d S.*

57. Differential Equations. Prof. Steck.

An elementary course devoted to the study of ordinary differential equations, especially those of the first and second orders, with applications to geometry, physics, and mechanics. Offered in alternate years. Given in 1915–1916.
Prerequisite—Mathematics 56. *Two exercises per week. 1st S.*

58. Determinants. Prof. Steck.

An introductory course in determinants with applications to algebra and geometry. Offered in alternate years. Given in 1914–1915.
Prerequisite—Mathematics 56. *Two exercises per week. 2d S.*

59. Theory of Equations. Prof. Moore.

An advanced course in the theory of equations. Offered in alternate years to Seniors and Juniors who have completed Mathematics 56. Given in 1914–1915. *Two exercises per week. 1st S.*

60. History of Mathematical Science. Prof. Moore.

A course designed to acquaint those who intend to teach mathematics with the development of algebra, geometry, trigonometry, analysis and calculus. Lectures, readings and recitations. Offered in alternate years. Given in 1915–1916.

Prerequisite—Mathematics 56. *Two exercises per week. 2d S.*

62. Astronomy. Prof. Pettee.

A short culture course designed to give the student a simple explanation of the many phenomena constantly exhibiting themselves in the universe and to acquaint him with the present state of astronomic science. Elective for Arts and Science Juniors and Seniors.

Two exercises per week. 2d S.

NOTE.—Students desiring to take Courses 57, 58, 59, or 60 should consult with the instructor before registering.

MECHANICAL ENGINEERING.

PROF. CARDULLO, ASST. PROF. MCKONE.

51. History of Mechanical Engineering. Prof. Cardullo.

A brief history of the development of the steam engine and other important mechanical inventions. For Electrical and Mechanical Freshmen. *One exercise per week, last half of semester. 1st S.*

52. Theoretical Mechanics. Prof. McKone.

Composition and resolution of forces, conditions of equilibrium, center of gravity with especial attention to plane surfaces, friction, the simple machines, laws of motion, constrained motion, impact, work and energy, moment of inertia, particularly of plane surfaces. For Electrical and Mechanical Sophomores. Mathematics 56 is required as a parallel course. *Three exercises per week. 2d S.*

53. Design of Machine Elements. Prof. Cardullo.

Strength of materials, and the design and proportion of machine parts, such as beams, shafts, gears, belts, springs, fastenings, etc. For Electrical and Mechanical Juniors.

Prerequisite—Mechanical Engineering 52.

Three exercises per week. 1st S.

54. Design of Machine Elements. Prof. Cardullo.

A continuation of Mechanical Engineering 53. For Electrical and Mechanical Juniors.

Prerequisite—Mechanical Engineering 53.

Three exercises per week. 2d S.

55. Designing and Drawing. Prof. McKone.

The application of Course 53 to practical problems worked out on the drafting board. For Electrical and Mechanical Juniors. Mechanical Engineering 53 is required as a parallel course.

Two exercises per week. 1st S.

56. Designing and Drawing. Prof. McKone.

A continuation of Course 55. For Electrical and Mechanical Juniors. Mechanical Engineering 54 is required as a parallel course.

Two exercises per week. 2d S.

57. Thermodynamics. Prof. Cardullo.

A study of the thermodynamic properties of gases and vapors, and the phenomena of operation of thermodynamic engines; analysis of energy losses and methods of minimization; interpretation of indicator and temperature-entropy diagrams; study of steam engines and turbines, boilers, gas engines and producers, and refrigerating machinery. For Electrical and Mechanical Juniors.

Prerequisite—Mathematics 56. Three exercises per week. 1st S.

58. Thermodynamics. Prof. Cardullo.

A continuation of Course 57. For Electrical and Mechanical Juniors.

Prerequisite—Mechanical Engineering 57.

Three exercises per week. 2d S.

59. Mechanical Laboratory. Prof. Cardullo, Prof. McKone.

A study of apparatus and methods of calibration used in engineering investigations; testing of iron, steel and wood; valve setting and indicator practice. For Electrical and Mechanical Juniors. Mechanical Engineering 57 is required as a parallel course.

Prerequisite—Mechanical Engineering 52.

Two exercises per week. 1st S.

60. Mechanical Laboratory. Prof. Cardullo, Prof. McKone.

A study of miscellaneous engineering materials and apparatus, and standard methods of testing; lubricants, cements, fuels, boilers, engines, pumps, power plant appliances and supplies, etc. For Electrical and Mechanical Juniors.

Prerequisite—Mechanical Engineering 59.

Two exercises per week. 2d S.

61. Hydraulics. Prof. Cardullo.

A study of the principles and practice of hydraulic machinery and measurements. For Electrical and Mechanical Seniors.

Prerequisite—Mechanical Engineering 53.

Three exercises per week. 1st S.

63. Materials of Engineering. Prof. McKone.

A study of the properties, commercial forms, methods of preparation and use of engineering materials. For Electrical and Mechanical Seniors. *Two exercises per week. 1st S.*

65. Mechanical Laboratory. Prof. Cardullo, Prof. McKone.

A critical study and detailed analysis of the performance of engineering apparatus, particularly of steam and gas engines, hydraulic apparatus, etc. For Electrical and Mechanical Seniors.

Prerequisite—Mechanical Engineering 60.

Two exercises per week. 1st S.

66. Mechanical Laboratory. Prof. McKone.

A continuation of Course 65 for Mechanical Seniors.

Prerequisite—Mechanical Engineering 65.

Three exercises per week. 2d S.

67. Advanced Design. Prof. Cardullo, Prof. McKone.

For Mechanical Engineering Seniors.

Three exercises per week. 1st S.

68. Advanced Design. Prof. Cardullo, Prof. McKone.

A continuation of Course 67 for Mechanical Engineering Seniors.

Five exercises per week. 2d S.

70. Industrial Administration. Prof. Cardullo.

A discussion of the principle and practice of systems of shop organization and management, cost keeping, wage payment, and methods of cost reduction; also a discussion of engineering finance, welfare work, labor conditions, factory laws, etc. For Mechanical and Mechanic Arts Seniors. Elective for others. *Three exercises per week. 2d S.*

71. Thermodynamics. Prof. McKone.

A study of the thermodynamic properties of substances and of power plant apparatus. For Chemical Engineering Seniors.

Two exercises per week. 1st S.

72. Manual Training. Prof. Cardullo.

A study of the purpose of manual training work, of the proper methods of teaching, and of the equipment of manual training schools. For Seniors in the Mechanic Arts Course. *One exercise per week. 2d S.*

METEOROLOGY.

PROF. PETTEE.

1. Meteorology.

Recitations and lectures on wind systems, precipitation, humidity, laws of storms and tornadoes and methods of prediction of atmospheric changes. For Agricultural Seniors. Elective for Arts and Science students.

Prerequisite—A course in Physics. *Two exercises per week. 1st S.*

*MILITARY SCIENCE AND TACTICS.

LIEUT. HUNT.

Unless excused by proper authority, all male students are required to complete three years' satisfactory work in Drill and two years' satisfactory work in theoretical Military Science.

Drill.

Drill includes practical instruction in the following subjects: Close and Extended Order Drills by Company and Battalion, Advance and Rear Guards, Outposts, Marches, Ceremonies, Battalion Review, Parades and Guard Mounting, Guard Duty, Calisthenics and Gymnastics, Rifle Practice, First Aid to the Injured.

1. Military Drill.

For Freshmen. *Two exercises per week. 1st S.*

2. Military Drill.

A continuation of Drill 1. For Freshmen.

Two exercises per week. 2d S.

3. Military Drill.

For Sophomores *Two exercises per week. 1st S.*

4. Military Drill.

A continuation of Drill 3. For Sophomores.

Two exercises per week. 2d S.

5. Military Drill.

For Juniors. *Two exercises per week. 1st S.*

6. Military Drill.

A continuation of Drill 5. For Juniors.

Two exercises per week. 2d S.

*Students who are excused from Drill by competent authority are required to take additional work in some subject equivalent in hours to the military work from which they are excused.

7. Military Drill.

Elective for Seniors only. *Two exercises per week. 1st S.*

8. Military Drill.

A continuation of Drill 7. Elective for Seniors only.
Two exercises per week. 2d S.

Military Science.

Military Science includes theoretical instruction in the principles of the military profession and in the theory of the specific movements taught on the drill ground and in the field, the military policy and history of the United States, the principles of military discipline and the administrative duties of military officers.

1. Infantry Drill Regulations.

Practical instruction and lectures. For Freshmen.
One exercise per week. 1st S.

2. Manual of Guard Duty and Small Arms Firing Regulations.

Practical instruction and lectures. For Freshmen.
Prerequisite—Military Science 1. One exercise per week. 2d S.

3. Field Service Regulations.

Lectures and discussions covering advance and rear guards, outposts, patrol, etc. For Sophomores.
Prerequisite—Military Science 2. One exercise per week. 1st S.

4. Field Service Regulations.

A continuation of Military Science 3. Practical field work. For Sophomores.
Prerequisite—Military Science 3. One exercise per week. 2d S.

5. Field Engineering and Hasty Intrenching.

Lectures and practical work. Elective for Juniors.
Prerequisite—Military Science 4, and open only to students who are taking Drill. *One exercise per week. 1st S.*

6. Military Map Reading and Sketching.

Theoretical and practical work. Elective for Juniors.
Prerequisite—Military Science 4, and open only to students who are taking Drill. *One exercise per week. 2d S.*

7. Army Regulations, Organization and Administration.

Lectures and preparation of military papers. Elective for Seniors.
Prerequisite—Military Science 4, and open only to students who are taking Drill. *One exercise per week. 1st S.*

8. Army Regulations, Organization and Administration.

A continuation of Military Science 7. Elective for Seniors. *Prerequisite—Military Science 7,* and open only to students who are taking Drill. *One exercise per week. 2d S.*

PHYSICAL CULTURE.

Unless excused by proper authority, all women students are required to complete three years' work in Physical Culture.

1. Physical Culture.

A course in free-hand calisthenics, dumb bell and wand drills, apparatus work and gymnasium dancing adapted to the needs of women students. *One exercise per week. 1st S.*

2. Physical Culture.

A continuation of Physical Culture 1. *One exercise per week. 2d S.*

PHYSICS.

PROF. FISHER, MR. PALMER.

51. Mechanics and Heat.

Lectures, illustrated by experiments, with note-books to be handed in at intervals and occasional written quizzes. As little mathematics is used in this course as is consistent with the proper interpretation of the lecture experiments. For Engineering, Agricultural and Mechanic Arts Sophomores. Elective for Arts and Science students. *Two exercises per week. 1st S.*

52. Magnetism and Electricity.

A continuation of Course 51. *Two exercises per week. 2d S.*

53. Physical Theory and Practice.

Course 51 is required either in parallel or previous to this course. Students electing Course 53 are advised to take analytics and calculus; the lack of them will prove a hindrance. For Mechanical and Electrical Sophomores. Elective for Arts and Science students. *Four exercises per week. 1st S.*

54. Physical Theory and Practice.

A continuation of Course 53.
Prerequisites—51 and 53. *Four exercises per week. 2d S.*

55. Mathematical Physics and Practice.

For Chemical Juniors. Elective for Arts and Science students. More advanced than 53 and 54. Courses 51 and 52 must precede or accompany this course. K in 51 or 52 will bar from this course.

Prerequisites—Mathematics 52, 55 and 56.

Four exercises per week. 1st S.

56. Mathematical Physics and Practice.

A continuation of Course 55. K in Mathematics 52, 55, or 56 will bar from this course. *Four exercises per week. 2d S.*

58. Elementary Physics and Practice.

A review of physics of elementary grade, for students who do not desire a mathematical course, but need a study of principles, with laboratory applications. Mathematics 51 and Physics 51 and 52 must precede or accompany this. Required of Mechanic Arts Sophomores; elective for Arts and Science students. *Three exercises per week. 2d S.*

NOTE.—The following deposits are required at the beginning of the work of a year or part of a year: 51, 52,—75c for notes, not returnable; 53, 54, 55, 56—$2; 58—$1.00, for notes and damage, balance returnable at end of year.

NOTE.—Students desiring to be recommended as high school physics teachers must pass with grade of 80 in Courses 51, 52, 55, 56, or with grade of 85 in Courses 51, 52, 53, 54.

POLITICAL SCIENCE.

PROF. SCOTT.

2. Laws of Business.

Recitations supplemented by the discussion of cases. For Mechanic Arts Seniors. Elective for Arts and Science Juniors and Seniors and Agricultural Seniors. *Three exercises per week. 2d S.*

3. American Constitutional Law.

Recitations, supplemented by a study of the decisions of the United States Supreme Court. Special attention is given to the connection between American constitutions and American political history. For Mechanic Arts Juniors. Elective for Arts and Science Juniors and Seniors and Agricultural Seniors. *Three exercises per week. 1st S.*

PSYCHOLOGY.

PROF. GROVES.

52. Introduction to Psychology.

An introduction to the science of psychology which aims to give the student a systematic knowledge of the structure and functions of the mind. Simple experiments are used to illustrate fundamental laws of the mind and to develop in the student power in introspection. The principles of the science are related as closely as possible to the concrete experiences of the student. A discussion of normal psychology with only incidental attention to abnormal mind states. This course must be elected by all who wish to elect other courses in psychology. Sophomore subject. *Three exercises per week. 2d S.*

53. Educational Psychology.

This course aims to set forth the scientific basis of teaching in so far as it is found in the science of psychology and to enable the student to investigate educational problems from the point of view of mental development in the child.

The course covers the following ground:

A. A study of the important mental processes that have direct bearing upon the problems of education.

B. A series of experiments with reference to educational principles and teaching problems of a psychological character.

C. Original investigation by the statistical method of concrete educational problems.

D. Study of the recent literature in the field of educational psychology.

Junior subject.

Prerequisite—Psychology 52. *Three exercises per week. 1st S.*

***55. Social Psychology.**

A study of the development and the characteristics of the social mind of man.

The course covers the following ground:

A. The study in detail of the character and operation of the instincts, sentiments and emotions of man of primary importance for his life in society.

B. The study of the operation of the modern social mind, including a discussion of suggestibility, the crowd, mob mind, fashion, conventionality, custom-imitation, social conflict, discussion, public opinion and problems of social control.

Senior subject.

Prerequisite—Psychology 52. *Three exercises per week. 1st S*

***57. Psychology of the Abnormal Mind.**

The study of abnormal forms of mentality in their relation to the operations of the normal mind. The course aims to illustrate fundamental laws of the mind and to contribute to the student useful information to one interested in psychology and social problems.

The course covers the following ground:

A. A study of sleep, dream-life, hypnosis, theory of the subconscious, mental diseases of psychological interest, psychotherapy, including the Freudian theory of psycho-analysis, principles of mental hygiene.

B. Individual study by the student of recent, original investigations in the field of abnormal psychology published in the technical periodicals.

Senior subject.

Prerequisite—Psychology 52. *Three exercises per week. 1st S*

SHOP WORK.

PROF. CARDULLO, MR. PHILBRICK, MR. CAHILL.

51. Wood Work. Mr. Philbrick.

Exercises in carpentry work, joinery and pattern making. For Engineering and Mechanic Arts Freshmen. Elective for Arts and Science Freshmen. *Two exercises per week. 1st S.*

51a. Wood Work. Mr. Philbrick.

Similar to Course 51. For Chemical Freshmen.

One exercise per week. 1st S.

52. Wood Work. Mr. Philbrick.

Wood work arranged to suit the needs of students taking the Mechanic Arts Course for Teachers. For Mechanic Arts Freshmen.

Two exercises per week. 2d S.

53. Wood Work. Mr. Philbrick.

Same as Course 51. For Agricultural Sophomores.

One exercise per week. 1st S.

55. Forging. Mr. Cahill.

For Agricultural Sophomores. *One exercise per week. 1st S*

57. Forging. Mr. Cahill.

Exercises in upsetting, drawing, forming and welding. For Electrical and Mechanical Sophomores. *Two exercises per week. 1st S.*

*Psychology 55 and 57 are given in alternate years. Psychology 57 is offered in 1914–1915.

59. Wood Work. Mr. Philbrick.

For Mechanic Arts Sophomores. *Two exercises per week. 1st S.*

60. Wood Work. Mr. Philbrick.

A continuation of Course 59. For Mechanic Arts Sophomores.
Three exercises per week. 2d S.

62. Machine Work. Mr. Cahill.

A course in turning, facing, thread cutting, milling, shaping, scraping, filing and planing. For Electrical and Mechanical Sophomores.
Two exercises per week. 2d S.

63. General Machine Work. Mr. Cahill.

A continuation of Course 62. For Electrical and Mechanical Juniors.
Two exercises per week. 1st S.

64. Manufacturing. Mr. Cahill.

Construction and use of jigs and special fixtures; use of limit gauges, special tools, turret and screw machinery; manufacture of some simple machine, using special appliances. For Electrical Juniors. Elective for Mechanical Juniors. *Two exercises per week. 2d S.*

65. Wood Work. Mr. Philbrick.

For Mechanic Arts Juniors. *Three exercises per week. 1st S.*

66. Forge Work. Mr. Cahill.

For Mechanic Arts Juniors. *Three exercises per week. 2d S.*

68. Machine Work. Mr. Cahill.

Same as Course 62. For Chemical Juniors.
Two exercises per week. 2d S.

69. Advanced Shop Work. Mr. Cahill, Mr. Philbrick.

Foundry practice; advanced pattern making and advanced machine shop practice. For Mechanical Seniors.
Two exercises per week. 1st S.

70. Advanced Shop Work. Mr. Cahill.

A continuation of Course 69. For Mechanical Seniors.
Two exercises per week. 2d S.

71. Machine Work. Mr. Cahill.

Machine work arranged to meet the needs of students taking the Mechanic Arts Course for Teachers. For Mechanic Arts Seniors.
Two exercises per week. 1st S.

72. Machine Work. Mr. Cahill.

A continuation of Shop Work 71. *Three exercises per week. 2d S.*

SOCIOLOGY.

PROF. GROVES.

51. Primitive Man and Social Origins.

An elementary study of life of primitive man, the beginnings of human society and the factors that condition social evolution. The course aims to introduce the student to a field of investigation of special value to the student of the social sciences. Special attention is given to the study of primitive social control. Ethnological readings are required.

The course includes a discussion of the following topics: Geographical basis of human society, origin and antiquity of primitive man, races, race crossing, prehistoric culture periods, primitive life conditions including food, housing, inventions, slavery, art, dress, marriage, family forms and customs, totemism, tabu, magic, medicine men, ceremonies, secret societies, clan and tribal organization.

Special attention will be given to the theories of human association. Sophomore subject. *Three exercises per week. 1st S.*

52. Social Pathology and Modern Philanthropy.

This course in modern social problems covers the following ground:

A. Study of the nature, origin and proper treatment of dependent, defective and delinquent classes, including an introduction to the theories of criminal anthropology.

B. Study of contemporary social problems and movements for social betterment as reported in *The Survey.*

C. Thesis work on the part of the student based upon first-hand study of some concrete social problem.

Senior subject.

Prerequisite—Sociology 51 for General Arts and Science students.

Three exercises per week. 2d S.

53. Mental Defectives.

A sociological study of mental defectiveness with special attention to the problem of social prophylaxis. A course designed for students who plan to engage in social or educational work of an administrative or institutional character or who plan to do graduate work in the field of psychology or sociology.

The course covers the following ground:

A. The study of amentia, including a discussion of the number, causation, pathology, classification, characteristics, problem of diagnosis and prognosis and the treatment of aments.

B. The study of the constitution and function of the psychological clinic, method of classifying clinic cases, the Binet measuring scale, the sociological relations of the clinic.

C. Individual study by the student of typical cases of mental defec iveness by the case method.

D. An introduction to the literature of amentia.

Senior subject.

Prerequisites—Psychology 52 and Sociology 51.

Three exercises per week. 1st

54. Rural Sociology.

A study of the social significance, conditions and resources of Amer can country life with the purpose of developing community leadershi The course includes a discussion of the following:

A. Rural ethnology and sociology. Land basis of society, origin primitive agriculture, animal and plant life as factors in human progres modern agriculture and population, migration, immigration and cit drift.

B. Rural social psychology. Imitation and city influence, suggest bility, conflict, discussion, public opinion and community pride.

C. Rural social pathology. Dependents, defectives and delinquen in their relation to the country community, problem of rural poli protection, moral problems of the rural community.

D. Rural progress. Survey making, communication, community a vertising, associations and clubs, rural education, wider use of rur school houses, rural school gardens, community competition, fairs, recr ation, the rural church and welfare work.

Senior subject.

Prerequisite—Sociology 51, except for Agricultural Seniors.

Three exercises per week. 2d

SPANISH.

PROF. WHORISKEY, ASST. PROF. WHITMAN.

1. Elementary Spanish. Prof. Whitman.

Elements of Spanish grammar. Reading of simple stories; conve sation and dictation. Elective for Arts and Science students.

Three exercises per week. 1st

2. A Continuation of Spanish 1.

Prerequisite—Spanish 1. *Three exercises per week. 2d*

ZOÖLOGY.

PROF. JACKSON, MR. BATCHELDER.

The courses in Zoölogy are arranged in sequence as follows: Studen desiring a general scientific knowledge of the subject should elect fro Groups A, C and D. For students desiring a more practical knowled of physiology, hygiene and sanitation courses should be chosen fro

Group B. Those students desiring to teach the subject, or contemplating entering the medical profession should consult the head of the department as to sequence of courses. Any course offered may be taken by students who have completed the required prerequisites.

Group A. Systematic Zoölogy.

51. General Zoölogy.

A study of the fundamental principles of life, the nature of protoplasm, structure of the cell, and the process of cell division. The structure, habits and life history of the different types of invertebrate animals will be discussed, the economic aspect being especially emphasized. For Agricultural and Home Economics Freshmen and Mechanic Arts Sophomores. Elective for Arts and Science students.

Three exercises per week. 1st S.

52. General Zoölogy.

A study of the structure, habits, and life history of vertebrate animals. Their economic aspect will be especially emphasized and their importance and relation to man. For Agricultural and Home Economics Freshmen and Mechanic Arts Sophomores. Elective for Arts and Science students.

Prerequisite—Zoölogy 51. Three exercises per week. 2d S.

53. Faunal Zoölogy. (Invertebrate.)

A study of the habits, life history and identification of local, invertebrate animals, exclusive of the insects. The work will consist of field trips, lectures and laboratory practice in the identification of the material collected.

Prerequisites—Zoölogy 51 and 52. Three exercises per week. 1st S.

54. Faunal Zoölogy. (Vertebrate.)

A study of the habits, life history and identification of vertebrate animals with special reference to their economic importance. More advanced than Course 52, and systematic rather than anatomical.

Prerequisites—Zoölogy 51 and 52. Three exercises per week. 2d S.

55. Systematic Entomology.

The collection and identification of insects without regard to their economic importance.

Prerequisites—Zoölogy 51 and 52. Three exercises per week. 1st S.

56. Ornithology.

A study of the classification, identification and economic importance of the birds. Lectures, field trips and written reports.

Prerequisites—Zoölogy 51 and 52. Three exercises per week. 2d S.

Group B. Physiology, Hygiene and Sanitation.

57. Human Anatomy and Physiology.

A detailed study of the structure, physiology and histology of t human body. The various functions of the body will be discuss primarily with the view of forming a basis for the following course.

Prerequisites—Zoölogy 51 and 52. Three exercises per week. 1st

58. Hygiene and Sanitation.

A study of the fundamental principles of hygiene and sanitatio The principal human bacterial diseases will be discussed; the method infection and means of prevention.

Prerequisites—Zoölogy 51, 52 and 57. Three exercises per week. 2d

59. Human Pathology.

The physiological aspect of the principal human diseases.

Prerequisites—Zoölogy 51, 52, 57 and 58.

Three exercises per week. 1st

60. Embryology.

A study of the development of the vertebrate embryo. The labor tory work will be principally with the frog and the chick. The lectu work will include human embryology.

Prerequisites—Zoölogy 51, 52, 57 and 58.

Three exercises per week. 2d

61. Advanced Neurology.

A detailed study of the structure and physiology of the human nervo system. Especially adapted for students of Psychology.

Prerequisites—Zoölogy 51, 52, 57 and 58.

Three exercises per week. 1st

Group C. Philosophical Zoölogy.

62. Experimental Zoölogy.

An experimental study of the fundamental nature of protoplasm a its various physical and chemical properties. Offered in 1914–1915.

Prerequisites—Zoölogy 51, 52, 57, 58, 60.

Three exercises per week. 2d

63. Evolution.

Lectures dealing with the theoretical side of the problems of evolutio The history of evolution and various theories of heredity, variation a selection will be discussed.

Prerequisites—Zoölogy 51, 52, 57, 58. Three exercises per week. 1st

64. Eugenics.

A study of the principles of eugenics and the problems of evolutio applied to human life.

Prerequisites—Zoölogy 51, 52, 57, 58, 63.

Three exercises per week. 2d

Group D. Anatomical Zoölogy.

65. Comparative Anatomy of the Invertebrates.

A detailed study of the structure of the different types of the invertebrates exclusive of the insects. Conference and laboratory work.

Prerequisites—Zoölogy 51 and 52. Three exercises per week. 1st S.

66. Comparative Anatomy of the Vertebrates.

A detailed study of the structure of the different types of the vertebrates, with special reference to the nervous system. Conference and laboratory work.

Prerequisites—Zoölogy 51 and 52. Three exercises per week. 2d S.

67. Histology.

A detailed study of the structure of the tissues of the human body, cell specialization, and the manner in which the tissues are combined into organs. The work will be of a technical nature and adapted for advanced students in Human Physiology.

Prerequisites—Zoölogy 51, 52, 57 and 58.

Three exercises per week. 1st S.

68. Insect Anatomy.

A study of the anatomy of the different types of insects. Especially adapted for students in Entomology.

Prerequisites—Zoölogy 51, 52, 55. Three exercises per week. 2d S.

Group E. Advanced Zoölogy.

69. Advanced Zoölogy.

Arranged to suit the individual needs of those who wish to specialize in Zoölogy.

Open only to students by permission of the head of the department.

Credit and hours to be arranged. 1st S.

70. Advanced Zoölogy.

A continuation of Course 69. *Credit and hours to be arranged. 2d S.*

71. Vocational Zoölogy.

A discussion of the principles of teaching Zoölogy, and the application of Zoölogy to other lines of work.

Open only to students by special permission.

Three exercises per week. 1st S.

72. Thesis.

Open only to students by permission from the head of the department.

Two exercises per week. 2d S.

COURSES OF STUDY.

(For details, see Description of Studies.)

AGRICULTURAL DIVISION.

All Courses.

FRESHMAN YEAR, FIRST SEMESTER.

		Hours
Chemistry 51	Inorganic Chemistry	3
Drill 1	Military Drill	1
English 51	English Composition	3
**French 1 or*	Elementary French	3
**German 1*	Elementary German	
Mathematics 51	Algebra and Trigonometry	4
Military Science 1	Infantry Drill Regulations	1
Zoölogy 51	General Zoölogy	3

FRESHMAN YEAR, SECOND SEMESTER.

Chemistry 52	Inorganic Chemistry	3
Drawing 54	Industrial Drawing	2
Drill 2	Military Drill	1
English 52	English Composition	3
**French 2 or*	Elementary French	3
**German 2*	Elementary German	
Mathematics 54	Surveying	2
Military Science 2	Manual of Guard Duty	1
Zoölogy 52	General Zoölogy	3

SOPHOMORE YEAR, FIRST SEMESTER.

Agronomy 51	Farm Equipment and Machinery	3
Animal Husbandry 51	Breeds of Live Stock	4
Botany 51	General Botany	3
Chemistry 59	Introductory Qualitative Analysis	2
Drill 3	Military Drill	1
Military Science 3	Field Service Regulations	1
Physics 51	Mechanics and Heat	2
Shop Work 53	Wood Work	1
Shop Work 55	Forging	1

*Any four-year agricultural student who presents at least four years' work in two foreign languages for entrance may substitute other subjects for the French or German of the Freshman year.

SOPHOMORE YEAR, SECOND SEMESTER.

		Hours
Botany 52	General Botany	3
Chemistry 60	Quantitative Analysis	3
Dairying 52	Farm Dairying	3
Drill 4	Military Drill	1
Horticulture 52	Olericulture	2
Horticulture 54	Practical Pomology	3
Military Science 4	Field Service Regulations	1
Physics 52	Magnetism and Electricity	2

Animal Husbandry and Dairy Course.

JUNIOR YEAR, FIRST SEMESTER.

Agronomy 53	Farm Crops	3
**Animal Husbandry 55 or*	Veterinary Anatomy	3
**Dairying 53*	Buttermaking	
**Animal Husbandry 61 or*	Poultry	3
**Entomology 1*	Economic Entomology	
Drill 5	Military Drill	1
Forestry 51	Principles of Forestry	3
Geology 51	Elementary Geology	3
Elective		2

JUNIOR YEAR, SECOND SEMESTER.

Agronomy 52	Soils	3
Animal Husbandry 54	Feeds and Feeding	3
**Animal Husbandry 56 or*	Veterinary Medicine	3
**Dairying 58*	Cheese Making	
Botany 56	Bacteriology	3
Dairying 54	Market Milk	3
Drill 6	Military Drill	1
Elective		2

SENIOR YEAR, FIRST SEMESTER.

Agronomy 55	Farm Management	3
Animal Husbandry 57	Breeding and Management	3
Economics 1	Elementary Economics	3
Meteorology 1	Meteorology	2
Elective		5

SENIOR YEAR, SECOND SEMESTER.

Agronomy 54	Fertilizers	3
Economics 8	Agricultural Economics	3
English 56	Argumentation and Debating	3
Elective		7

* Elective.

Forestry Course.

JUNIOR YEAR, FIRST SEMESTER.

		Hours
Botany 53	Plant Physiology	3
Drill 5	Military Drill	1
Entomology 1	Economic Entomology	3
Forestry 53	Dendrology	4
Forestry 55	Silviculture	5
Geology 51	Elementary Geology	3

JUNIOR YEAR, SECOND SEMESTER.

Agronomy 52	Soils	3
Botany 54	Plant Histology	3
Drill 6	Military Drill	1
Forestry 52	Silviculture	3
Forestry 54	Forest Mensuration	3
Horticulture 56	Landscape Gardening	3
Elective		2

SENIOR YEAR, FIRST SEMESTER.

Botany 57	Plant Pathology	3
Economics 1	Elementary Economics	3
Forestry 57	Forest Protection	2
Forestry 59	Practice of Forestry	3
Meteorology 1	Meteorology	2
Elective		3

SENIOR YEAR, SECOND SEMESTER.

Economics 8	Agricultural Economics	3
English 56	Argumentation and Debating	3
Forestry 56	Forest Management	4
Elective		6

Horticultural Course.

JUNIOR YEAR, FIRST SEMESTER.

Agronomy 53	Farm Crops	3
Botany 53	Plant Physiology	3
Drill 5	Military Drill	1
Entomology 1	Economic Entomology	3
Forestry 51	Principles of Forestry	3
Geology 51	Elementary Geology	3
Horticulture 53	Greenhouse Management	3

JUNIOR YEAR, SECOND SEMESTER.

		Hours
Agronomy 52	Soils	3
Animal Husbandry 54	Feeds and Feeding	3
Drill 6	Military Drill	1
Horticulture 56	Landscape Gardening	3
Horticulture 58	Nursery Management	3
Horticulture 60	Floriculture	2
Elective		3

SENIOR YEAR, FIRST SEMESTER.

Agronomy 55	Farm Management	3
Botany 57	Plant Pathology	3
Economics 1	Elementary Economics	3
Horticulture 55	Systematic Pomology	4
Horticulture 57	Evolution of Plants	2
Meteorology 1	Meteorology	2

SENIOR YEAR, SECOND SEMESTER.

Agronomy 54	Fertilizers	3
Economics 8	Agricultural Economics	3
English 56	Argumentation and Debating	3
Horticulture 62	Horticultural Seminar	1
Elective		5

General or Teaching Course.

JUNIOR YEAR, FIRST SEMESTER.

Agronomy 53	Farm Crops	3
Botany 53	Plant Physiology	3
Drill 5	Military Drill	1
Entomology 1	Economic Entomology	3
Forestry 51	Principles of Forestry	3
Geology 51	Elementary Geology	3
Elective		2

JUNIOR YEAR, SECOND SEMESTER.

Agronomy 52	Soils	3
Animal Husbandry 54	Feeds and Feeding	3
Dairying 54	Market Milk	3
Drill 6	Military Drill	1
Elective		8

NOTE—Students taking the General or Teaching Course who expect to teach science and agriculture should elect Psychology 52 in the second semester of the Junior Year and Psychology 53 and Sociology 54 in the Senior Year.

SENIOR YEAR, FIRST SEMESTER.

		Hours
Agronomy 55	Farm Management	3
Economics 1	Elementary Economics	3
Horticulture 57	Evolution of Plants	2
Meteorology 1	Meteorology	2
Elective		6

SENIOR YEAR, SECOND SEMESTER.

Agronomy 54	Fertilizers	3
Economics 8	Agricultural Economics	3
English 56	Argumentation and Debating	3
Elective		7

ARTS AND SCIENCE DIVISION.

General Arts and Science Course.

FRESHMAN YEAR, FIRST SEMESTER.

All elective except English 51 and 52, Drill and Military Science, and, for women, Home Economics 1 and Physical Culture.

Chemistry 51 or / *Chemistry 55*	Inorganic Chemistry	3
Drawing 51	Engineering Drawing	2
Drill 1	Military Drill	1
English 51	English Composition and Rhetoric	3
French 1 or / *German 1*	Elementary French / Elementary German	3
History 1	European History, 476–1492	3
Home Economics 1	Personal Hygiene	1
Home Economics 3 or / *Home Economics 5*	Food Economics / Clothing	3
Latin 1	Livy	3
Mathematics 51	Algebra and Trigonometry	4
Mathematics 53	Solid Geometry	2
Military Science 1	Infantry Drill Regulations	1
Physical Culture 1	Physical Culture	1
Shop Work 51	Wood Work	2
Zoölogy 51	General Zoölogy	3

FRESHMAN YEAR, SECOND SEMESTER.

Chemistry 52 or / *Chemistry 56*	Inorganic Chemistry / Special Chemistry	3
Drawing 58	Descriptive Geometry	2

		Hours
Drawing 64	Free-hand or Charcoal Drawing	2
Drill 2	Military Drill	1
Economics 2	Commercial Geography	3
English 52	English Composition and Rhetoric	3
English 54	Introduction to English Literature	3
French 2 or	Elementary French	3
German 2	Elementary German	
History 2	European History, 1492–1715	3
Home Economics 2	Household Management	3
Latin 2	Horace	3
Mathematics 52	Analytic Geometry	4
Mathematics 54	Surveying (last half of semester)	2
Military Science 2	Manual of Guard Duty	1
Physical Culture 2	Physical Culture	1
Zoölogy 52	General Zoölogy	3

SOPHOMORE YEAR, FIRST SEMESTER.

All elective except Drill, Military Science and Physical Culture.

Botany 51	General Botany	3
Chemistry 57	Special Organic Chemistry	3
Chemistry 59	Introductory Qualitative Analysis	2
Drill 3	Military Drill	1
Economics 1	Elementary Economics	3
English 53	Advanced Composition and Literary Criticism	3
Entomology 1	Economic Entomology	3
French 3	French Prose	3
German 3	German Prose	3
History 3	European History, 1715–1815	3
Home Economics 7	Foods	3
Latin 3	Terence	3
Mathematics 55	Calculus	5
Military Science 3	Field Service Regulations	1
Physical Culture 1	Physical Culture	1
Physics 51	Mechanics and Heat	2
Physics 53	Physical Theory and Practice	4
Sociology 51	Primitive Man and Social Origins	3
Spanish 1	Elementary Spanish	3
Zoölogy 51	General Zoölogy	3
Zoölogy 53	Faunal Zoölogy (Invertebrate)	3
Zoölogy 57	Human Anatomy and Physiology	3

SOPHOMORE YEAR, SECOND SEMESTER.

		Hours
Botany 52	General Botany	3
Chemistry 68	Organic Chemistry	3
Drill 4	Military Drill	1
Economics 2	Commercial Geography	3
English 54	Introduction to English Literature	3
English 56	Argumentation	3
Entomology 2	Applied Economic Entomology	3
Entomology 4	Household Insects	2
French 4	French Prose	3
German 4	German Prose	3
History 4	European History since 1815	3
Home Economics 8	Foods	4
Home Economics 10	Household Art and Design	2
Latin 4	Tacitus	3
Mathematics 56	Calculus	3
Military Science 4	Field Service Regulations	1
Physical Culture 2	Physical Culture	1
Physics 52	Magnetism and Electricity	2
Physics 54	Physical Theory and Practice	4
Physics 58	Elementary Physics and Practice	3
Psychology 52	Introduction to Psychology	3
Spanish 2	Elementary Spanish	3
Zoölogy 52	General Zoölogy	3
Zoölogy 54	Faunal Zoölogy (Vertebrate)	3

JUNIOR YEAR, FIRST SEMESTER.

All elective except Drill and Physical Culture.

Botany 53	Plant Physiology	3
Botany 55	General Bacteriology	3
Botany 57	Plant Pathology	3
Chemistry 59	Introductory Qualitative Analysis	2
Chemistry 65	Quantitative Analysis	4
Chemistry 69	Organic Chemistry	2
Dairying 51	Domestic Dairying	3
Drill 5	Military Drill	1
Economics 5 or	Labor Problems	3
Economics 7	Socialism	
Economics 9	Corporation Finance	3
Economics 11	Economic Problems of the Home	2
English 53	Advanced Composition and Literary Criticism	3
English 55 or	The English Novel	3
English 57	Modern English Poetry	

		Hours
Entomology 1	Economic Entomology	3
Entomology 3	Insects of Domestic Animals	2
Entomology 5	Advanced Economic Entomology	2
French 5 or *French 7*	French Literature and Composition	3
Geology 51	Elementary Geology	3
German 5 or *German 7 or* *German 13*	Goethe / Schiller / Sudermann	3
German 9 or *German 11*	German Composition and Conversation	3
History 5	American History to 1801	3
Mathematics 57 or *Mathematics 59*	Differential Equations / Theory of Equations	2
Military Science 5	Field Engineering and Hasty Intrenching	1
Physical Culture 1	Physical Culture	1
Physics 55	Mathematical Physics and Practice	4
Political Science 3	American Constitutional Law	3
Psychology 53	Educational Psychology	3
Psychology 55 or *Psychology 57*	Social Psychology / Psychology of the Abnormal Mind	3
Sociology 53	Mental Defectives	3
Spanish 1	Elementary Spanish	3
Zoölogy 57	Human Anatomy and Physiology	3
Zoölogy 59	Human Pathology	3

JUNIOR YEAR, SECOND SEMESTER.

Botany 54	Plant Histology	2
Botany 56	Bacteriology	3
Chemistry 68	Organic Chemistry	3
Drill 6	Military Drill	1
Economics 4 or *Economics 6*	Money and Banking / Public Finance and Taxation	3
Economics 8	Agricultural Economics	3
English 54	Introduction to English Literature	3
English 56	Argumentation	3
English 58 or *English 62*	English Drama / Shakespeare's Plays	3
English 60	American Literature	4
Entomology 4	Household Insects	2
Entomology 6	Advanced Economic Entomology	3
French 6 or *French 8*	French Literature and Composition	3

		Hours
Geology 54	Mineralogy	2
German 6 or *German 8 or* *German 14*	Goethe Schiller Sudermann	3
German 10 or *German 12*	German Composition and Conversation	3
History 6	Constitutional and Political History of U. S. (1801–1860)	3
Mathematics 58 or *Mathematics 60*	Determinants History of Mathematics	2
Military Science 6	Military Map Reading and Sketching	1
Physical Culture 2	Physical Culture	1
Physics 56	Mathematical Physics and Practice	4
Political Science 2	Laws of Business	3
Psychology 52	Introduction to Psychology	3
Sociology 52	Social Pathology and Modern Philanthropy	3
Spanish 2	Elementary Spanish	3
Zoölogy 54	Faunal Zoölogy	3
Zoölogy 66	Comparative Anatomy of the Vertebrates	3

SENIOR YEAR, FIRST SEMESTER.

All elective.

Botany 53	Plant Physiology	3
Botany 55	General Bacteriology	3
Botany 57	Plant Pathology	3
Chemistry 71	Organic Chemical Laboratory	3
Dairying 51	Domestic Dairying	3
Drill 7	Military Drill	1
Economics 5 or *Economics 7*	Labor Problems Socialism	3
Economics 9	Corporation Finance	3
Economics 11	Economic Problems of the Home	2
English 55 or *English 57*	English Novel Modern English Poetry	3
Entomology 1	Economic Entomology	3
Entomology 3	Insects of Domestic Animals	2
Entomology 5	Advanced Economic Entomology	3
French 5 or *French 7*	French Literature and Composition	3
Geology 51	Elementary Geology	3

		Hours
German 5 or	Goethe	
German 7 or	Schiller	3
German 13	Sudermann	
German 9 or	German Composition and Conver-	
German 11	sation	3
History 7	Constitutional and Political History of U. S. since 1860	3
Mathematics 57 or	Differential Equations	2
Mathematics 59	Theory of Equations	
Meteorology 1	Meteorology	2
Military Science 7	Army Regulations	1
Political Science 3	American Constitutional Law	3
Psychology 57	Psychology of the Abnormal Mind	3
Sociology 53	Mental Defectives	3
Spanish 1	Elementary Spanish	3
Thesis		2
Zoölogy 69	Advanced Zoölogy	
Zoölogy 71	Vocational Zoölogy	3

SENIOR YEAR, SECOND SEMESTER.

Botany 54	Plant Histology	2
Botany 56	Bacteriology	3
Chemistry 76	Physical and Electro Chemistry	3
Drill 8	Military Drill	1
Economics 4 or	Money and Banking	3
Economics 6	Public Finance and Taxation	
Economics 8	Agricultural Economics	3
English 58 or	English Drama	3
English 62	Shakespeare's Plays	
English 60	American Literature	4
Entomology 2	Applied Economic Entomology	3
Entomology 4	Household Insects	2
French 6 or	French Literature and Composition	3
French 8		
Geology 52	Historical Geology	3
German 6 or	Goethe	
German 8 or	Schiller	3
German 14	Sudermann	
German 10 or	German Composition and Conversa-	
German 12	tion	3
Mathematics 58 or	Determinants	2
Mathematics 60	History of Mathematical Science	
Mathematics 62	Astronomy	2
Military Science 8	Army Regulations	1

		Hours
Political Science 2	Laws of Business	3
Sociology 54	Rural Sociology	3
Spanish 2	Elementary Spanish	3
Thesis		1 or 2
Zoölogy 56	Ornithology	3
Zoölogy 58	Hygiene and Sanitation	3
Zoölogy 64	Eugenics	3
Zoölogy 68	Insect Anatomy	3
Zoölogy 70	Advanced Zoölogy	
Zoölogy 72	Thesis	2

Home Economics Course.

FRESHMAN YEAR, FIRST SEMESTER.

Required Subjects:		
Chemistry 55	Inorganic Chemistry	3
English 51	English Composition and Rhetoric	3
Home Economics 1	Personal Hygiene	1
Home Economics 3 or	Food Economics	3
Home Economics 5	Clothing	3
Physical Culture 1	Physical Culture	1
Zoölogy 51	General Zoölogy	3
*Elective Subjects:	Total hours	3 or 4
French 1	Elementary French	3
German 1	Elementary German	3
History 1	European History, 476–1492	3
Mathematics 51	Algebra and Trigonometry	4

FRESHMAN YEAR, SECOND SEMESTER.

Required Subjects:		
Chemistry 56	Special Chemistry	3
Drawing 60	Mechanical Drawing	2
English 52	English Composition and Rhetoric	3
Home Economics 2	Household Methods and Management	3
Physical Culture 2	Physical Culture	1
Zoölogy 52	General Zoölogy	3
*Elective Subjects:	Total hours	3
English 54	Introduction to English Literature	3
French 2	Elementary French	3
German 2	Elementary German	3
History 2	European History, 1492–1715	3

*Other subjects may be offered for the elective requirement.

SOPHOMORE YEAR, FIRST SEMESTER.

		Hours
Required Subjects:		
Chemistry 57	Special Organic Chemistry	3
Drawing 55	Color Problems	1
Home Economics 7	Foods	3
Physical Culture 1	Physical Culture	1
Zoölogy 57	Physiology	3
‡Elective Subjects:	Total hours	5 or 6
Botany 51	General Botany	3
English 53	Advanced Composition and Criticism	3
German 3	German Prose	3
†*Physics 51*	Mechanics and Heat	2

SOPHOMORE YEAR, SECOND SEMESTER.

Required Subjects:		
Home Economics 8	Foods	4
Home Economics 10	Household Art and Design	2
Physical Culture 2	Physical Culture	1
Psychology 52	Introduction to Psychology	3
‡Elective Subjects:	Total hours	7 or 8
Botany 52	General Botany	3
English 56	Argumentation	3
Entomology 4	Household Insects	2
German 4	German Prose	3
†*Physics 52*	Magnetism and Electricity	2

JUNIOR YEAR, FIRST SEMESTER.

Required Subjects:		
Botany 55	Bacteriology	3
Home Economics 11	Nutrition	3
Home Economics 13	Home Decoration	2
Physical Culture 1	Physical Culture	1
‡Elective Subjects:	Total hours	7 or 8
Dairying 51	Domestic Dairying	3
Home Economics 15	Textiles	3

†Should be elected by students not offering physics for entrance.

‡The student has a choice of a wide range of elective subjects from all departments of the college. Other subjects may be offered for the elective requirement.

JUNIOR YEAR, SECOND SEMESTER.

		Hours
Required Subjects:		
Home Economics 12	Dietetics	3
Home Economics 16	Home Nursing	2
Physical Culture 2	Physical Culture	1
Zoölogy 58	Hygiene and Sanitation	3
*Elective Subjects:	Total hours	7 or 8
Home Economics 18	History of Costume	2

SENIOR YEAR, FIRST SEMESTER.

Required Subjects:		
Economics 11	Economic Problems of the Home	2
Home Economics 19	Home Administration	2
*Elective Subjects:	Total hours	12
Dairying 51	Domestic Dairying	3
Home Economics 21	Seminar	3
Home Economics 23	Teaching of Domestic Art	3

SENIOR YEAR, SECOND SEMESTER.

Required Subjects:		
Home Economics 20	Humanics	2
Sociology 52	Social Pathology and Modern Philanthropy	3
*Elective Subjects:	Total hours	11
Home Economics 22	Seminar	3
Home Economics 24	Teaching of Domestic Science	3

Mechanic Arts Course for Teachers.

FRESHMAN YEAR, FIRST SEMESTER.

Chemistry 51	Inorganic Chemistry	3
Drawing 51	Engineering Drawing	2
Drill 1	Military Drill	1
English 51	English Composition and Rhetoric	3
Mathematics 51	Algebra and Trigonometry	4
Mathematics 53	Solid Geometry	2
Military Science 1	Infantry Drill Regulations	1
Shop Work 51	Wood Work	2

*The student has a choice of a wide range of elective subjects from all departments of the college. Other subjects may be offered for the elective requirement.

FRESHMAN YEAR, SECOND SEMESTER.

		Hours
Chemistry 52	Inorganic Chemistry	3
Drawing 58	Descriptive Geometry (first half of semester)	2
Drill 2	Military Drill	1
English 52	English Composition and Rhetoric	3
Mathematics 52	Analytic Geometry	4
Mathematics 54	Surveying (last half of semester)	2
Military Science 2	Manual of Guard Duty	1
Shop Work 52	Wood Work	2

SOPHOMORE YEAR, FIRST SEMESTER.

Chemistry 59	Introductory Qualitative Analysis	2
Drawing 61	Special Drawing	1
Drill 3	Military Drill	1
**Economics 1*	Elementary Economics	3
English 53	Advanced Composition and Literary Criticism	3
**German 1*	Elementary German	3
Military Science 3	Field Service Regulations	1
Physics 51	Mechanics and Heat	2
Shop Work 59	Wood Work	2
Zoölogy 51	General Zoölogy	3

SOPHOMORE YEAR, SECOND SEMESTER.

Drawing 62	Special Drawing	2
Drill 4	Military Drill	1
**German 2*	Elementary German	3
Military Science 4	Field Service Regulations	1
Physics 52	Magnetism and Electricity	2
Physics 58	Elementary Physics and Practice	3
**Psychology 52*	Introduction to Psychology	3
Shop Work 60	Wood Work	3
Zoölogy 52	General Zoölogy	3

JUNIOR YEAR, FIRST SEMESTER.

Drawing 65	Special Drawing	1
Drill 5	Military Drill	1
†*Economics 1*	Elementary Economics	3
**English 55 or*	The English Novel	3
**English 57*	Modern English Poetry	
Forestry 53	Dendrology	4
**Geology 51*	Elementary Geology	3
**German 3*	German Prose	3

*Elective.

† Required if not previously taken.

		Hours
History 1	European History, 476–1492	3
**Military Science 5*	Field Engineering and Hasty Intrenching	1
Political Science 3	American Constitutional Law	3
Shop Work 65	Wood Work	3

JUNIOR YEAR, SECOND SEMESTER.

Drawing 66	Special Drawing	2
Drill 6	Military Drill	1
**Economics 2*	Commercial Geography	3
**Economics 4 or*	Money and Banking	3
**Economics 6*	Public Finance and Taxation	
**Forestry 60*	Forest Utilization	3
**German 4*	German Prose	3
History 2	European History, 1492–1715	3
**History 6*	American History, 1801–1860	3
**Military Science 6*	Military Map Reading and Sketching	1
†*Psychology 52*	Introduction to Psychology	3
Shop Work 66	Forge Work	3

SENIOR YEAR, FIRST SEMESTER.

Drawing 71	Special Drawing	1
Electrical Engineering 9	Industrial Electricity	3
**English 55 or*	The English Novel	3
**English 57*	Modern English Poetry	
**German 11*	German Composition	3
**History 7*	American History since 1860	3
Psychology 53	Educational Psychology	3
Shop Work 71	Machine Work	2
Sociology 51	Primitive Man and Social Origins	3

SENIOR YEAR, SECOND SEMESTER.

Drawing 72	Special Drawing	2
English 60	American Literature	4
**Forestry 60*	Forest Utilization	3
**German 12*	German Composition	3
**History 6*	American History, 1801–1860	3
Mechanical Engineering 70	Industrial Administration	3
Mechanical Engineering 72	Manual Training	1
Political Science 2	Laws of Business	3
Shop Work 72	Machine Work	3
**Sociology 52*	Social Pathology and Modern Philanthropy	3

*Elective.

†Required if not previously taken.

ENGINEERING DIVISION.

Electrical and Mechanical Engineering Courses.

FRESHMAN YEAR, FIRST SEMESTER.

		Hours
Chemistry 51	Inorganic Chemistry	3
Drawing 51	Engineering Drawing	2
Drawing 53	Shop Mathematics (First half of semester)	1
Drill 1	Military Drill	1
Electrical Engineering 7	History of Electrical Engineering	½
English 51	English Composition and Rhetoric	3
Mathematics 51	Algebra and Trigonometry	4
Mechanical Engineering 51	History of Mechanical Engineering	½
Military Science 1	Infantry Drill Regulations	1
Shop Work 51	Wood Work	2

FRESHMAN YEAR, SECOND SEMESTER.

Chemistry 52	Inorganic Chemistry	3
Chemistry 54	Qualitative Analysis	3
Drawing 56	Descriptive Geometry	3
Drill 2	Military Drill	1
English 52	English Composition and Rhetoric	3
Mathematics 52	Analytic Geometry	4
Military Science 2	Manual of Guard Duty	1

SOPHOMORE YEAR, FIRST SEMESTER.

Drawing 57	Machine Drawing	3
Drill 3	Military Drill	1
Mathematics 55	Calculus	5
Military Science 3	Field Service Regulations	1
Physics 51	Mechanics and Heat	2
Physics 53	Physical Theory and Practice	4
Shop Work 57	Forging	2

SOPHOMORE YEAR, SECOND SEMESTER.

Drill 4	Military Drill	1
Machine Design 52	Kinematics of Machinery	2
Mathematics 56	Calculus	3
Mechanical Engineering 52	Theoretical Mechanics	3
Military Science 4	Field Service Regulations	1
Physics 52	Magnetism and Electricity	2
Physics 54	Physical Theory and Practice	4
Shop Work 62	Machine Work	2

JUNIOR YEAR, FIRST SEMESTER.

		Hours
Drill 5	Military Drill	1
Electrical Engineering 1	Dynamo Electric Machinery	4
Machine Design 53	Kinematics of Machinery	2
Mechanical Engineering 53	Design of Machine Elements	3
Mechanical Engineering 55	Designing and Drawing	2
Mechanical Engineering 57	Thermodynamics	3
Mechanical Engineering 59	Mechanical Laboratory	2
Shop Work 63	General Machine Work	2

JUNIOR YEAR, SECOND SEMESTER.

Drill 6	Military Drill	1
Electrical Engineering 2	Dynamo Electric Machinery	4
Machine Design 54	Kinematics of Steam Machinery	2
Mechanical Engineering 54	Design of Machine Elements	3
Mechanical Engineering 56	Designing and Drawing	2
Mechanical Engineering 58	Thermodynamics	3
Mechanical Engineering 60	Mechanical Laboratory	2
Shop Work 64	Manufacturing	2

Electrical Engineering Course.

SENIOR YEAR, FIRST SEMESTER.

Economics 1	Elementary Economics	3
Electrical Engineering 3	Telegraph and Telephone	1
Electrical Engineering 11	Electrical Engineering Practice	4
Electrical Engineering 15	Electrical Laboratory	3
Mechanical Engineering 61	Hydraulics	3
Mechanical Engineering 63	Materials of Engineering	2
Mechanical Engineering 65	Mechanical Laboratory	2

SENIOR YEAR, SECOND SEMESTER.

Electrical Engineering 12	Electrical Engineering Practice	4
Electrical Engineering 14	Electric Railways	2
Electrical Engineering 16	Electrical Laboratory	3
Electrical Engineering 24	Design of Electrical Machinery	2
Electrical Engineering 26	Illuminating Engineering	2
Electrical Engineering 28	Contracts and Specifications	2
English 56	Argumentation and Debating	3

Mechanical Engineering Course.

SENIOR YEAR, FIRST SEMESTER.

Economics 1	Elementary Economics	3
Electrical Engineering 19	Dynamo Electric Machinery	3
Mechanical Engineering 61	Hydraulics	3

		Hours
Mechanical Engineering 63	Materials of Engineering	2
Mechanical Engineering 65	Mechanical Laboratory	2
Mechanical Engineering 67	Advanced Design	3
Shop Work 69	Advanced Shop Work	2

SENIOR YEAR, SECOND SEMESTER.

Electrical Engineering 28	Contracts and Specifications	2
Mechanical Engineering 66	Mechanical Laboratory	3
Mechanical Engineering 68	Advanced Design	5
Mechanical Engineering 70	Industrial Administration	3
Shop Work 70	Advanced Shop Work	2
Sociology 52	Social Pathology	3

Chemical Engineering Course.

FRESHMAN YEAR, FIRST SEMESTER.

Chemistry 51	Inorganic Chemistry	3
Drawing 51	Engineering Drawing	2
Drill 1	Military Drill	1
English 51	English Composition and Rhetoric	3
French 1 or	Elementary French	3
German 1	Elementary German	
Mathematics 51	Algebra and Trigonometry	4
Military Science 1	Infantry Drill Regulations	1
Shop Work 51 a	Wood Work	1

FRESHMAN YEAR, SECOND SEMESTER.

Chemistry 52	Inorganic Chemistry	3
Chemistry 54	Qualitative Analysis	3
Drill 2	Military Drill	1
English 52	English Composition and Rhetoric	3
French 2 or	Elementary French	3
German 2	Elementary German	
Mathematics 52	Analytical Geometry	4
Military Science 2	Manual of Guard Duty	1

SOPHOMORE YEAR, FIRST SEMESTER.

Chemistry 61	Qualitative Analysis	1¼
Chemistry 63	Inorganic Preparations	¾
Chemistry 65	Quantitative Analysis	4
Drill 3	Military Drill	1
German 3	German Prose	3
Mathematics 55	Calculus	5
Military Science 3	Field Service Regulations	1
Physics 51	Mechanics and Heat	2

SOPHOMORE YEAR, SECOND SEMESTER.

		Hours
Chemistry 66	Quantitative Analysis	5
Chemistry 68	Organic Chemistry	3
Drill 4	Military Drill	1
German 4	German Prose	3
Mathematics 56	Calculus	3
Military Science 4	Field Service Regulations	1
Physics 52	Magnetism and Electricity	2

JUNIOR YEAR, FIRST SEMESTER.

Chemistry 69	Organic Chemistry	2
Chemistry 71	Organic Chemical Laboratory	3
Chemistry 73	Advanced Quantitative Analysis	4
Chemistry 75 or *Chemistry 77*	Physical Chemistry / Advanced Inorganic Chemistry	3
Drill 5	Military Drill	1
**Military Science 5*	Field Engineering and Hasty Intrenching	1
Physics 55	Mathematical Physics and Practice	4

JUNIOR YEAR, SECOND SEMESTER.

Chemistry 74	Advanced Quantitative Analysis	5
Chemistry 76 or *Chemistry 78* / *Chemistry 80*	Physical and Electro Chemistry / Industrial Chemistry / Metallurgy	3
Drill 6	Military Drill	1
Geology 54	Mineralogy	2
**Military Science 6*	Military Map Reading and Sketching	1
Physics 56	Mathematical Physics and Practice	4
Shop Work 68	Machine Work	2

SENIOR YEAR, FIRST SEMESTER.

Chemistry 75 or *Chemistry 77*	Physical Chemistry / Advanced Inorganic Chemistry	3
Chemistry 79	Assaying	1
Chemistry 83	Advanced Quantitative Laboratory	6
**Drill 7*	Military Drill	1
Economics 1	Elementary Economics	3

*Elective.

		Hours
Electrical Engineering 21	Industrial Electricity	3
Mechanical Engineering 71	Thermodynamics	2
**Military Science 7*	Army Regulations	1

SENIOR YEAR, SECOND SEMESTER.

Chemistry 76 or	Physical and Electro Chemistry	3
Chemistry 78	Industrial Chemistry	
Chemistry 80	Metallurgy	
Chemistry 84	Thesis	6
**Drill 8*	Military Drill	1
Electrical Engineering 22	Industrial Electricity	3
English 56 or	Argumentation and Debating	3
Sociology 52	Social Pathology	
Machine Design 56	Mechanism	3
**Military Science 8*	Army Regulations	1

*Elective.

THE TWO-YEAR COURSE IN AGRICULTURE.

This course was established by the state legislature in 1895, and provides an opportunity to secure a training for their life work for those students who do not have the time, money or preparation to take a four-year college course.

The course is especially arranged, and suited for the young, bright boys of the farm, who expect to make a business of some line of agricultural or horticultural work. Although it is open to students who have had no previous training on the farm, the entrance of such is not encouraged because of their lack of practical experience. By independent work and close application, however, inexperienced students sometimes pass the course with credit.

The year's work closes the middle of May, so as to enable the students to get home for the spring work on the farm or to accept other positions for the summer. This short school year also permits four months' time for those students who are dependent upon their own resources to earn money for the following year.

The courses of study and the classes of the two-year course are, for the most part, separate and distinct from those of the four-year courses. The work of the first year is largely preparatory, being a study of the sciences underlying agriculture, together with some elementary agricultural and horticultural work. The second year contains optional studies so that it is possible for students to specialize in animal husbandry, dairying, horticulture or forestry. Ten hours per week on the average are spent in practical work on the farm, in the barn, greenhouses, shops or forest.

Admission.—The course is open to those who can pass a fair and reasonable examination in reading, spelling, writing, arithmetic, English grammar, geography and history of the United States. Applicants, unless over eighteen years of age, who do not bring high school or other satisfactory

certificates to show their proficiency in these subjects, will be given an entrance examination on Tuesday afternoon and Wednesday morning of the opening week of college. Applicants who are over eighteen years of age will be admitted without examination.

Expenses.—The expenses of the course will vary with the taste and frugality of the students and the kind of accommodations which they secure. The total average expense for the year, if the student holds a scholarship, is not far from $250. Many students by working for their board or room rent, or by doing various kinds of work about the college or village, are able to go through the year with a cash outlay not exceeding $150.

Opening.—The course for the year will open Wednesday, September 16, 1914, and close Wednesday, May 19, 1915. A Christmas vacation of two weeks, a winter vacation of one week, and a spring vacation of six days will be given.

Graduation.—No degree is given at the end of the course, but a certificate of graduation is issued upon its completion or the completion of its equivalent.

Students graduating from the two-year course in 1914 and thereafter must present to the dean on or before the second Tuesday preceding their graduation satisfactory evidence of having had practical experience in farm work, either through having lived on a farm for at least two years subsequent to the age of 12 or through having worked on a farm for at least four months subsequent to the age of of 15.

Students graduating from this course in 1915 must have at least 75 credit hours.

DESCRIPTION OF STUDIES.

AGRONOMY.

PROF. TAYLOR, ASST. PROF. STOKES.

31. Farm Equipment and Soils.

Lectures on the selection, planning and equipment of a farm; fencing, drainage and farm implements. Text-book and recitations upon the formation, kinds and physical properties of soils. One afternoon per week is devoted to laboratory work. For Two-Year Students, Second Year.

Three exercises per week. 1st S.

32. Farm Crops.

Similar to Agronomy 53. For Two-Year Students, Second Year.

Three exercises per week. 2d S.

34. Manures and Fertilizers.

Text-book and recitations upon the constituents of farm manures and chemical fertilizers, the care and application of manures, the home-mixing of fertilizers and the modifications required by different soils and crops. For Two-Year Students, Second Year.

Two exercises per week. 2d S.

36. Farm Management.

Similar to Agronomy 55. Elective for Two-Year Students, Second Year.

Three exercises per week. 2d S.

ANIMAL HUSBANDRY.

PROF. ECKMAN, ASST. PROF. MITCHELL, MR. JONES.

32. Types and Breeds of Live Stock.

Similar to Animal Husbandry 51. For Two-Year Students, First Year.

Four exercises per week. 2d S.

34. Feeds and Feeding.

Similar to Animal Husbandry 54. For Two-Year Students, Second Year.

Three exercises per week. 2d S.

35. Veterinary Science.

Similar to Animal Husbandry 55. Elective for Two-Year Students.

Three exercises per week. 1st S.

36. Veterinary Science.

Similar to Animal Husbandry 56. Elective for Two-Year Students. *Prerequisite—Animal Husbandry 35.*

Three exercises per week. 2d S.

37. Sheep Raising.

Similar to Animal Husbandry 59. Elective for Two-Year Students, Second Year. *Three exercises per week. 1st S.*

38. Animal Breeding.

A study of the principles and practices of animal breeding. Practice is given in tracing pedigrees. Elective for Two-Year Students, Second Year. *Two exercises per week. 2d S.*

39. Poultry.

Similar to Animal Husbandry 61. Elective for Two-Year Students. *Three exercises per week. 1st S.*

40. Poultry.

Similar to Animal Husbandry 62. Elective for Two-Year Students. *Prerequisite—Animal Husbandry 39.*

Three exercises per week. 2d S.

BOTANY.

PROF. BUTLER, ASST. PROF. BLACK, MISS TEMPLETON.

31. Elements of Botany.

This course is devoted to the study of how plants grow and how plants feed. Lectures and laboratory work. For Two-Year Students, First Year. *Three exercises per week. 1st S.*

32. Fungous Diseases of Plants.

The principal fungous diseases, their cure and prevention. Lectures and laboratory work. For Two-Year Students, First Year.

Two exercises per week. 2d S.

CHEMISTRY.

MR. HOLDEN.

32. Elementary Applications.

An elementary course, with special reference to the elements of plant food, composition of fertilizers, elements subject to exhaustion in soils, etc. For Two-Year Students, First Year.

Two exercises per week. 2d S.

DAIRYING.

PROF. RASMUSSEN, MR. WILSON, MR. PIERPONT.

31. Milk—Milk Testing.

Lectures and recitations on the composition and properties of milk, the Babcock test, the lactometer, and the inspection of milk; value and methods of keeping records of dairy cows, coöperation in dairying. For Two-Year Students, First Year. *Three exercises per week. 1st S.*

32. Market Milk.

A study of the value of milk as a food, the production and handling of market milk and of certified milk. Commercial milk inspection. Exercises will be given in the judging of milk and cream and in the scoring of dairies. Elective for Two-Year Students, Second Year.

Three exercises per week. 2d S.

33. Butter Making.

Comparative study of different systems of creaming and factors influencing the efficiency of the hand separator. A study of commercial starters, cream ripening, churning, marketing, and scoring of butter. Elective for Two-Year Students, Second Year.

Three exercises per week. 1st S.

34. Cheese Making.

Lectures and laboratory work covering the details of manufacture, curing and marketing of the more important kinds of cheese. Elective for Two-Year Students, Second Year. *Three exercises per week. 2d S.*

35. Dairy Bacteriology.

Methods of studying bacteria; relation of bacteria to milk and its products; and application of bacteriological principles to the dairy industry. Course open to a limited number of students. Elective for Two-Year Students, Second Year. *Three exercises per week. 1st S.*

DRAWING.

PROF. PUTNAM, MR. LATON.

31. Mechanical Drawing.

For Two-Year Students, Second Year. *One exercise per week. 1st S.*

ENGLISH.

MR. SCUDDER.

31. Grammar and Elementary Composition.

For Two-Year Students, First Year. *Three exercises per week. 1st S.*

32. Grammar and Composition.

For Two-Year Students, First Year.
Prerequisite—English 31. *Three exercises per week. 2d S.*

ENTOMOLOGY.

PROF. O'KANE, MR. HADLEY.

32. Principles of Economic Entomology.

The relation of the structure and classification of insects to methods of insect control. The preparation and application of insecticides. Spray machinery and appliances. For Two-Year Students, First Year.
Three exercises per week. 2d S.

FORESTRY.

PROF. FOSTER.

32. Farm Forestry.

A study of the general principles of forestry with particular reference to the care and management of woodlots; the various methods of cutting and reproducing forests; artificial reforestation; nursery practice; seeding and planting; estimating standing timber; log scales; protection of forests; markets. For Two-Year Students, First Year.
Two exercises per week. 2d S

HORTICULTURE.

PROF. GOURLEY, ASST. PROF. WOLFF, MR. LUMSDEN.

31. Vegetable Gardening.

A study of the commercial methods of vegetable growing. Special attention is given to the home garden. For Two-Year Students, First Year. *Two exercises per week. 1st S.*

32. Home Decoration.

A study of ornamental trees, shrubs and flowers; their culture, proper arrangement and decorative value, with special reference to the home surroundings. Elective for Two-Year Students, Second Year.
Three exercises per week. 2d S.

33. Fruit Growing.

This course embraces a study of commercial orcharding; each fruit is studied with reference to planting, cultivating, pruning, fertilizing, picking, packing, storing and marketing. For Two-Year Students, Second Year. *Three exercises per week. 1st S.*

34. Orchard Problems.

A course dealing with the principal problems of farm orchards and commercial orchard management. This course is designed to show the application of the principles of fruit growing to practical conditions. Elective for Two-Year Students, Second Year.

Two exercises per week. 2d S.

35. Greenhouse Management.

Combined lecture, demonstration and laboratory course in greenhouse management. Elective for Two-Year Students, Second Year.

Three exercises per week. 1st S.

MATHEMATICS.

PROF. STECK.

31. Arithmetic.

A review of arithmetic. For Two-Year Students, First Year.

Three exercises per week, first twelve weeks. 1st S.

33. Bookkeeping.

A short course in farm bookkeeping. For Two-Year Students, First Year.

Three exercises per week, last six weeks. 1st S.

MILITARY SCIENCE AND TACTICS.

LIEUT. HUNT.

Drill.

31. Military Drill.

For Two-Year Students, First Year. *Two exercises per week. 1st S.*

32. Military Drill.

For Two-Year Students, First Year. *Two exercises per week. 2d S.*

33. Military Drill.

For Two-Year Students, Second Year.

Two exercises per week. 1st S.

34. Military Drill.

For Two-Year Students, Second Year.

Two exercises per week. 2d S.

MILITARY SCIENCE.

31. Infantry Drill Regulations.

Practical instruction and lectures. For Two-Year Students, First Year.

One exercise per week. 1st S.

32. Manual of Guard Duty and Small Arms Firing Regulations.

Practical instruction and lectures. For Two-Year Students, First Year.

Prerequisite—Military Science 31. One exercise per week. 2d S.

33. Field Service Regulations.

For Two-Year Students, Second Year.

Prerequisite—Military Science 32. One exercise per week. 1st S.

34. Field Service Regulations.

Lectures on advance guards, outposts, etc. Continuation of Military Science 33. For Two-Year Students, Second Year.

Prerequisite—Military Science 33. One exercise per week. 2d S.

PHYSICS.

PROF. FISHER, MR. PALMER.

31. Elementary Physics.

A study of the principles of Physics, using as centers certain important practical machines, as the steam engine, the dynamo, the electric motor, etc. For Two-Year Students, Second Year.

Four exercises per week. 1st S.

SHOP WORK.

MR. PHILBRICK, MR. CAHILL.

32. Wood Work. Mr. Philbrick.

For Two-Year Students, First Year. *Two exercises per week. 2d S.*

34. Iron Work. Mr. Cahill.

For Two-Year Students, Second Year. *One exercise per week. 2d S.*

ZOÖLOGY.

PROF. JACKSON, MR. BATCHELDER.

31. Human Physiology and Hygiene.

A study of the structure, physiology and care of the human body. Special attention will be given to the fundamental principles of Zoölogy, the nature of parasitic and bacterial diseases and the means of prevention. For Two-Year Students, First Year.

Three exercises per week. 1st S.

TWO-YEAR COURSE OF STUDY.

First Year.

FIRST SEMESTER.

		Hours
Botany 31	Elements of Botany	3
Dairying 31	Milk and Milk Testing	3
Drill 31	Military Drill	1
English 31	Grammar and Elementary Composition	3
Horticulture 31	Vegetable Gardening	2
Mathematics 31	Arithmetic	2
Mathematics 33	Farm Bookkeeping	1
Military Science 31	Infantry Drill Regulations	1
Zoölogy 31	Human Physiology and Hygiene	3

SECOND SEMESTER.

Animal Husbandry 32	Breeds of Live Stock	4
Botany 32	Fungous Diseases of Plants	2
Chemistry 32	Elementary Applications	2
Drill 32	Military Drill	1
English 32	Grammar and Composition	3
Entomology 32	Economic Entomology	3
Forestry 32	Farm Forestry	2
Military Science 32	Manual of Guard Duty	1
Shop Work 32	Wood Work	2

Students who come prepared to take Freshman English may substitute English 51 for English 31.

Second Year.

FIRST SEMESTER.

Agronomy 31	Farm Equipment and Soils	3
**Animal Husbandry 35*	Veterinary Science	3
**Animal Husbandry 37*	Sheep Raising	3
**Animal Husbandry 39*	Poultry	3
**Dairying 33*	Butter Making	3
**Dairying 35*	Dairy Bacteriology	3
Drawing 31	Mechanical Drawing	1
Drill 33	Military Drill	1
**Forestry 53*	Dendrology	4
Horticulture 33	Fruit Growing	3
**Horticulture 35*	Greenhouse Management	3
Military Science 33	Field Service Regulations	1
Physics 31	Elementary Physics	4

*Elective. Elect courses to make a total of at least 18 hours.

SECOND SEMESTER.

		Hours
Agronomy 32	Farm Crops	3
Agronomy 34	Manures and Fertilizers	2
**Agronomy 36*	Farm Management	3
Animal Husbandry 34	Feeds and Feeding	3
**Animal Husbandry 36*	Veterinary Science	3
**Animal Husbandry 38*	Animal Breeding	2
**Animal Husbandry 40*	Poultry	3
**Dairying 32*	Market Milk	3
**Dairying 34*	Cheese Making	3
Drill 34	Military Drill	1
**Forestry 54*	Forest Mensuration	3
**Horticulture 32*	Home Decoration	3
**Horticulture 34*	Orchard Problems	2
Military Science 34	Field Service Regulations	1
Shop Work 34	Iron Work	1

* Elective. Elect courses to make a total of at least 18 hours.

THE SHORT COURSES.

The college offers the short courses for the purpose of affording an opportunity for the boys, the young men and the older men and women on the farms of our state to acquaint themselves with the latest and most approved principles and practices of agriculture. Since many of our farm people find it impossible to leave their homes during the spring, summer and fall months, these courses are given during the winter when most people can find time to slip away for at least a few weeks.

There is no longer any question concerning the value of practical scientific training for those who are engaged in farming. The increasing interest in agricultural work, the higher prices of farm products and the keener competition in all lines of production is making an education and training more and more a necessity for the people on our farms. It is hoped that these "short courses" will open an additional avenue through which the college may prove its value and usefulness to the farmers of the state.

Admission.—The short courses are open to men and women 16 years of age and upward. No entrance examination is required. To be most benefited, however, by the courses the students should be at least 18 or 20 years of age and have had some practical experience on a farm.

Expenses.—Tuition is free to residents of New Hampshire. Non-residents will pay a tuition fee of $10 upon registering at the beginning of the course. Board and room will cost about $5 per week. Other expenses including books need not exceed a total of $5 although an allowance of $10 for books alone to be taken home would be a good investment.

Prizes.—Through the courtesy of Mr. Thomas Jones Davis of Duluth, Minnesota, three suitable prizes will be given to students taking the five-week dairy course who rank highest in judging dairy cattle.

COURSE IN FRUIT GROWING AND GENERAL AGRICULTURE.

This course will open *Monday, January 4* ,and close *Friday, January 29, 1915*. The subjects taught will include the following: (1) Practical Pomology, (2) Small Fruits, (3) Vegetable Growing, (4) Soil Fertility, (5) Forage and Silage Crops, (6) Woodlot Forestry, (7) Poultry.

DESCRIPTION OF STUDIES.

Horticulture 40. Practical Pomology.

This course will deal with the practical operations in the orchard, such as pruning, spraying, thinning, cultivation, and picking, packing and marketing apples. When the weather permits the class will visit the orchards and receive instruction in orchard management.

Three excercises per week.

Horticulture 41. Small Fruits.

In this course lectures and practice will be given in the propagation and culture of strawberries, raspberries, blackberries, currants, gooseberries, and grapes and the varieties suited to New Hampshire conditions. *Three exercises per week.*

Horticulture 42. Vegetable Growing.

Lectures will be given on the best varieties of vegetables for home and market use, their culture and methods of preparing for market. Special attention will be given to the making and handling of cold frames and hotbeds. *Three exercises per week.*

Agronomy 40. Forage and Silage Crops.

This course will consist of lectures upon forage and silage crops which are suited to New Hampshire conditions. Soiling crops, the construction of silos and the growing of crops for the silo will be treated in as much detail as the time allows. Practice in judging corn and testing seeds will be given. *Three exercises per week.*

Agronomy 41. Soil Fertility.

This course will consist of lectures upon the plant food elements in the soil, the constituents of farm manures and commercial fertilizers, the care and application of manure, the home mixing of fertilizers and the formulas used for different soils and crops. Practice will be given in mixing fertilizers. *Three exercises per week.*

Forestry 40. Woodlot Forestry.

Lectures upon the principles of forestry as applied to farm woodlots. The rate of growth of different kinds of timber, proper methods of cutting and marketing and of planting waste and cutover areas will be studied. Practice will be given in estimating standing timber and the use of log rules. *Three exercises per week.*

Animal Husbandry 40. Poultry.

Lectures and laboratory work on the breeds of poultry, feeding, fattening, killing and dressing, marketing, poultry house construction, incubation, brooding and the common diseases of poultry.

Three exercises per week.

FARMERS' WEEK COURSE.

This course was first offered by the college in the spring of 1909, with a total enrollment of 80. In 1910 the enrollment was 199; in 1911 it was 238; in 1912 it was 273; in 1913 it was 331, and in 1914 it was 352.

The course is designed to meet the needs of the every-day practical farmer and his wife who cannot leave home for more than a few days, but who wish to get some new ideas concerning the newest and best methods of farming operations and household work.

This course will begin *Monday, February 1*, and close *Friday, February 5, 1915*. A special program will be issued later, copy of which will be sent upon request.

COURSE IN DAIRYING.

The Twentieth Annual Course in Dairying at the college will open *Tuesday, February 9*, and close *Friday, March 12, 1915*. Students should present themselves for registration

at Thompson Hall on the opening day. Lectures and laboratory work will begin the following day.

Instruction in Dairy Practice.—Instruction in the Dairy course is given by lectures, recitations and by laboratory work in the barn, dairy and creamery. The course is made as practical as possible, and the instruction is planned to meet the needs of two classes of students, namely, *butter makers*, and *dairymen* and *milk producers*.

Butter makers.—The work in the laboratory and classroom is conducted with a view to training men to be expert operators of skimming stations, creameries, and private dairies. Throughout the entire course students will be given practical work in the college creamery or dairy.

Dairymen and Milk Producers.—To make dairying in New Hampshire profitable, the dairyman must fully understand the handling of cows and their product. The course as outlined, treating of the feeding and breeding of cattle and the handling and marketing of dairy products especially suits the need of the dairy farmer. From time to time lectures will be given by successful and practical men directly engaged in agriculture. Excursions will be taken to up-to-date dairy farms and other dairy establishments.

The equipment in the dairy building is such that the laboratory work can be made applicable both to farm and factory conditions. The student will have an opportunity to study construction and efficiency, and operation of the various machines used in handling milk and making butter. The use of the Babcock test in apportioning the money value of milk is regulated by state law. The importance of the test in the successful improvement of the dairy herd is becoming more and more apparent. The details of the test will be studied, and the student will practice testing milk, cream, skim-milk and buttermilk until fully competent to perform the work for himself or for others.

Opportunities.—The need of competent trained dairymen is greater than ever before. There is an increasing

demand for first-class dairy products, such as butter, cheese, and condensed milk, and the making of these calls for first-class dairymen. The continuous campaign for pure milk in our cities is constantly opening up new positions for milk inspectors, and for men with training who can successfully manage dairy farms and care for the herd so as to produce sanitary milk economically. It also opens positions for men who are capable of operating milk depots and other dairy establishments. The organization of cow-test associations is opening up a new field for dairy workers. Although the school does not guarantee to find positions for those registered in the course it has opportunities to recommend students for a large number of positions. Inquiries for competent men are received throughout the year and thus far the college has been unable to supply men for all the places it has been asked to fill.

Certificates.—Students completing the required work of the Dairy Course, and passing satisfactory examinations, will be given certificates.

Equipment.—The New Hampshire College with its new dairy building offers excellent opportunities for giving instruction in practical dairy work.

Entirely new equipment has been installed in the college creamery, each piece of machinery being run by an individual electric motor. In addition to the milk obtained from the college herd, the creamery receives milk and cream from about forty farms. By this arrangement sufficient milk for practical work is furnished at all times. The farm dairy is equipped with the leading kinds of hand separators, and hand as well as small-power churns suitable for private dairies. The milk-testing and milk inspection laboratory is equipped with Babcock testers, sediment testers, acidimeters, and other apparatus necessary for inspection of milk and cream both as to fat content and other qualities. The creamery also contains bacteriology laboratories, a lecture room, offices, a reading room and rooms for an up-to-date milk bottling plant.

Representative animals of the Jersey, Guernsey, Ayrshire and Holstein breeds are owned by the college and are used to acquaint the student with the different breeds and types of dairy cattle.

DESCRIPTION OF STUDIES.

DAIRY PRODUCTS.

PROF. RASMUSSEN, MR. WILSON, MR. PIERPONT.

Dairying 40. Butter Making.

Lectures and recitations on the different systems of creaming milk and a comparison of the efficiency of different cream separators under varying conditions; cream ripening; churning, washing, marketing and scoring of butter. *One lecture and two laboratory periods per week.*

Dairying 41. Dairy Bacteriology.

Lectures and demonstrations on the functions of bacteria and the application of bacteriological principles to dairy work, such as pasteurization, cream ripening, commercial starters and deterioration of butter. *Two exercises per week.*

Dairying 42. Market Milk.

A study of the value of milk as a food and its relation to public health. The production and handling of market milk, of certified milk. Commercial milk inspection. Exercises will be given in the scoring of milk and cream, and in the scoring of dairies.

Two lectures and one laboratory period per week.

Dairying 43. Milk Testing.

This course will consist of a study of the composition, the physical and chemical properties of milk, the various methods of sampling and testing milk and cream, the testing of dairy herds and organizing and operating cow-test associations.

One lecture and two laboratory periods per week.

DAIRY CATTLE.

PROF. ECKMAN, ASST. PROF. MITCHELL.

Animal Husbandry 42. Breeds and Breeding.

Lectures and recitations upon the origin, history, characteristics, and adaptability of the breeds of dairy cattle. The practical work will con-

sist of scoring and judging the various breeds, and in tracing pedigrees of animals in the herd books.

Two lectures and one judging period per week.

Animal Husbandry 44. Diseases of Cattle.

This course will consist of lectures and recitations upon the anatomy and physiology of the cow, with special reference to the digestive, reproductive and milk-producing organs. The common diseases, their causes and the methods of treatment will be discussed.

Three exercises per week.

Animal Husbandry 45. Feeds and Feeding

Lectures and recitations upon the composition and digestibility of feeding stuffs. A detailed study of the different grains and feeds, and their value in a dairy ration. Practice will be given in computing and mixing rations for the dairy cow, and in fitting animals for the show ring.

Three exercises per week.

NEW HAMPSHIRE AGRICULTURAL EXPERIMENT STATION.

Most of the agricultural experiment stations of the various states, including that of New Hampshire, were founded in 1888 by an act of congress, approved March 2, 1887, known as the Hatch Act, in honor of its author. This act appropriated fifteen thousand dollars ($15,000) annually for the maintenance of an agricultural experiment station in each state. This act provides:

"That it shall be the object and duty of said experiment stations to conduct original researches or verify experiments on the physiology of plants and animals; the diseases to which they are severally subject with the remedies for the same; the chemical composition of useful plants at their different stages of growth; the comparative advantages of rotative cropping as pursued under a varying series of crops; the capacity of new plants or trees for acclimation; the analysis of soils and water; the chemical composition of manures, natural and artificial, with experiments designed to test their comparative effects on crops of different kinds; the adaptation and value of grasses and forage plants; the composition and digestibility of the different kinds of food for domestic animals; the scientific and economic questions involved in the production of butter and cheese; and such other researches or experiments bearing directly on the agricultural industry of the United States as may in each case be deemed advisable, having due regard to the varying conditions and needs of the respective states and territories." The act also provides that the results of such work shall be published in bulletins and reports.

A further endowment of the experiment stations to provide specifically for research work was made by the Adams Act, passed by congress and approved March 16, 1906,

which provided an increased annual appropriation which now amounts to $15,000 each year. This appropriation is specifically limited to the "necessary expenses of conducting original researches or experiments," and the rulings of the United States Department of Agriculture, which is vested with the supervision of the expenditures under this act, require that this appropriation be spent in fundamental investigations or researches to determine the underlying causes and principles of agricultural science, rather than for mere experiments to secure results of immediate practical application as contemplated under the Hatch Act appropriation. The purposes of the two acts are, therefore, supplementary but distinct.

The New Hampshire Agricultural Experiment Station is organized as a department of the New Hampshire College of Agriculture and the Mechanic Arts, and is administered by a board of control, elected by its board of trustees.

The publications of the station comprise 168 bulletins of the regular series and 14 circulars, 6 technical bulletins, and 7 scientific contributions, and 4 school bulletins. The bulletins are issued at irregular intervals and are sent to all residents of New Hampshire requesting them. Back numbers will be sent as long as the supply lasts. Lists of available publications will be sent upon request.

The above quotations taken from the Hatch and Adams acts are sufficient to indicate the true function of this and other experiment stations called into being by the passage of those laws. At first the experiment stations found it difficult to resist the popular demand made upon them to enter the extension field, to the neglect of research, but it is to the credit of those officials having the directing and executing of those laws in charge that our stations have proved true to their trust. If our stations had not devoted their energies to the fields of original research our agriculture now could not possibly be upon the high plane which it is today.

The introduction of the extension service as a recognized part of the work of this and other similar institutions only

serves to emphasize the importance of experiment station work. In our haste to produce immediate results we sometimes lose sight of the value of the work of our experiment stations. We do not realize the debt agriculture owes to the scientists who are willing to devote their life work to the study of one subject, or at least a very few subjects, without thought to personal ambition and advancement, but purely seeking after truth and the advancement of science.

We can, perhaps, best indicate in a brief way the present work of the New Hampshire Experiment Station by calling attention to those projects which are receiving special study and attention.

HATCH FUND.

Agronomy Department.—Variety tests of corn; ear row test of corn; fertilizer tests on grass lands; alfalfa improvement; clover plant selection; pasture improvement; timothy selection and breeding; investigations on potato culture.

Botany Department.—Effect of storage on keeping qualities of potatoes; apple diseases.

Animal Husbandry Department.—Sheep feeding; eradication of the stomach worm (Haemonchus contortus) and intestinal worms.

Entomological Department.—Control of black flies and midgets; economic collection of insects.

Horticultural Department.—Variety tests of plums; variety tests of apples; variety tests of small fruits.

Chemical Department.—Effect of lime on New Hampshire soils.

ADAMS FUND

Agronomy Department.—Water as a limiting factor in the production of corn.

Botanical Department.—A study of the toxic action of fungicides to parasitic fungi; physiology of the apple; a study of the effect of fungicides and insecticides on plants.

Chemical Department.—Potash in clay soils.

Entomological Department.—The apple maggot; control of root maggots by insecticides.

Horticultural Department.—Plant breeding: carnation breeding, squash breeding; fruit bud formation.

Animal Husbandry Department.—Sheep breeding.

The New Hampshire Experiment Station is glad at all times to give advice and assistance regarding all lines of agriculture and we invite you to make demands upon the station whenever you feel that this institution can be of assistance to you in any capacity. The experiment station is at the service of the citizens of New Hampshire at all times.

EXTENSION SERVICE.

The last few years have witnessed in this country a remarkable growth in the development of methods of teaching agriculture. The attitude of the public in general, as well as the rural population, toward technical agricultural training has become decidedly favorable. This change in feeling by the public toward the work of institutions offering training in agriculture has made possible and is responsible to a large extent for the unprecedented progress which has been made in agricultural teaching during the last dozen or fifteen years.

That form of agricultural teaching known as extension work is one of the most recent to be inaugurated. Some

form of organization for conducting agricultural extension work has been instituted at forty-three of our state agricultural colleges and universities. The scope of the extension service has been very rapidly extended until in some of our larger institutions it embodies some form of extension activity to correspond with the instruction given in each of the agricultural departments as well as in the divisions or departments of home economics.

No former attempt along agricultural educational lines has met with such a quick response from all classes of people. The results to be derived from the proper presentation of extension work were quickly recognized as being of the greatest importance to agricultural progress. Consequently large appropriations have been granted in many states for extension activities and the development of extension work which has followed has not only been rapid but extensive and the results obtained have been such as to fully justify all efforts and expenditures.

The extension service is intended to serve as a medium by which to take the work of both the college classroom and the experiment station fields and laboratories directly to the homes and to the fields of the farmers. It is very difficult to place any just estimate upon the value of such service to a state or to the nation. The farmer's cause is no longer considered of interest only to him. It is recognized today as never before that upon the prosperity of the farmer depends quite largely the general prosperity of all classes of people. The present high cost of living has done much to attract the attention of people to the relation which the farmer and his interests bear to them personally.

What the colleges and universities are to those young men and young women who come within their walls, the extension service is, only to a lesser degree, to the thousands who are beyond the reach of the classroom. In this state, for example, we have about 400 students enrolled at New Hampshire College, while there is a rural population in the state of nearly two hundred thousand, many of whom it is

possible to reach in some tangible and helpful way through the extension service.

Extension work at New Hampshire College may be said to have had its real beginning September 1, 1911, when the first money appropriated by the state for such a purpose became available for taking up extension work in a systematic manner. The appropriation was small, amounting to only $2,500 a year. The amount of money appropriated was so small that none of it was used for salaries. Consequently it was necessary to depend entirely upon the regular members of the college and station staff to conduct the extension work. In almost every instance it meant additional duties being thrust upon those already carrying full schedules of teaching and station responsibilities.

It may be of interest to note some of the things it has been possible to accomplish under the above named conditions and what the work should mean to the industrial interests of the state.

Letters of Inquiry.—One very noticeable and striking result of extension activities and the popularity of such work is the increasing number of letters of inquiry which have been received and answered by the members of the college and station staff. This would seem to indicate that as the institution and its various activities become better known they beome more highly appreciated by the citizens of the state. It is very difficult to place a true value upon the benefit that may be derived through the answering of letters of inquiry. When a person sits down and writes a letter to the station, he by that act shows that he is interested and information given will generally be put to good service.

Field Demonstrations.—Some of the most effective forms of extension service are those connected with practical demonstrations in the field conducted in different sections of the state in coöperation with farmers. Seeing is believing, and when demonstrations are made in neigh-

borhoods under conditions all of which are familiar in that vicinity, such demonstrations carry with them a prestige which they could not possibly have in those communities were the work carried on in any other localities. Realizing the importance of demonstrations, not only to farmers, but to the college and stations workers as well, the demonstration forms of extension work have received special attention.

Variety Tests of Corn.—While there does not exist today the same interest in growing corn for grain in New Hampshire as formerly, owing to the practice of growing more of the corn for the silo and the fact that the acreage devoted to the growing of corn has decreased very rapidly, amounting to nearly one-half during the thirty years ending 1909; yet in spite of this apparent loss of prestige as a farm crop in New Hampshire, corn still ranks third in importance when judged by its value. It is exceeded in value by only two crops, hay and forage, and the potato crop.

The corn situation in this state is a peculiar one; there do not seem to be any recognized strains of corn that are considered as being superior for growing in certain sections or over the state as a whole, as is the case in most states. Seed corn is generally selected in the immediate neighborhood. While this practice is commendable and is good husbandry, it does not necessarily follow that the seed now being grown is the best seed that might be obtained for that locality and under existing conditions. There has been little opportunity of determining this point by comparison. Two years ago a canvass was made of the state in an attempt to secure samples of the best seed corn being grown. Arrangements were made with five county farms and the State School for Feeble Minded at Laconia to test these most promising samples of seed corn side by side under the same conditions in the different parts of the state. It was hoped in this way to secure some of the most promising varieties of corn that could be grown in those sections and over the state as a whole. Plans are made to still further

improve these superior seeds through careful selection and breeding. It is possible for this institution to render the state a most valuable service through the dissemination of improved seeds. This work at similar institutions in other states has been a most potent factor in improving agriculture by increasing the yields and quality of crops grown and hence the farmers' net returns.

An average increase in yield of corn of only three bushels per acre in New Hampshire, at average prices, would amount to over $44,000 a year. In many instances it is possible to double the present yield of corn. In some parts of the state much can be done in the way of encouraging the growing of improved early maturing varieties of corn. At prevailing prices corn can be grown in this state at a profit. The last census shows, in value per acre, corn to be the most valuable cereal crop grown in the state.

Top Dressing Hay Lands.—A question frequently asked the station is whether it is practicable to try and keep up hay yields by top dressing grass lands with fertilizers, and if so, what chemicals or fertilizers would be the best to use for the purpose. The experiment station has a long-time test under way to secure some definite figures on the value of continuous top dressing of grass lands with different chemicals. Thirty plots are included in the test. The work has been under way seven years. In order to secure supplemental data on different types of soils coöperative tests are being conducted on county farms and on other farms located in different parts of the state.

Value of Lime on New Hampshire Soils.—Within the last few years much publicity has been given to the value of lime for agricultural purposes. Many lime and marl companies through their advertisements have made extravagant claims as to the value of their products. These claims for use of lime on the farm have naturally prompted many to write to the station for information on this subject. Results obtained by the experiment station on the college

farm differed from those obtained in many states and did not show the value claimed for lime by many of its friends. Not wishing to confine our investigations on lime to the type of soil and crops grown on the college farm, arrangements were made with some twenty-eight farmers located in different parts of the state to conduct coöperative tests of the value of lime. While the past three seasons have been so dry that it has not been the most favorable for carrying out a test with lime, and the work is not ready to be reported upon in definite form, apparently our soils do not require or make as good use of lime as the soils in some parts of the country.

Lime undoubtedly has a place in New Hampshire agriculture; it would seem, however, in view of tests completed to date, that it does not have so important a position as is sometimes attributed to it. In view of the prevailing prices asked for lime it would seem that economical use in this state should be restricted to use with certain crops and on soils known to be acid.

Orchard Sod Mulch.—A much discussed and very important subject of orchard management is the value of sod mulch as compared with clean culture. This is a subject of special interest in this state where there is such large acreage of good orchard lands which can be easily tilled. Sod mulch versus clean cultivation, both with and without fertilizers, is under test in a bearing orchard and a young orchard that has just been set out.

Spraying Demonstrations.—A subject of vital concern to all orchardists is that of when and how to spray and what to use for best results without injuring the fruit or foliage with spray materials. Aside from the tests made in the college orchards, coöperative spraying tests were made this year in some of the large commercial orchards of the state. Data and observations obtained in this way regarding spray materials under known conditions, while in

no way conclusive, should prove helpful to the orchardists of the state.

Orchard Cover Crops.—Another very important question of orchard improvement is being tested out through the extension service, and that is the most suitable cover crops to plant in cultivated orchards. Quite a number of crops and combinations of cover crops are now under trial and observation.

Orcharding is receiving more attention and study each year in New Hampshire and is proving to be worthy of the very best care and management. By natural endowment our soils and climate are well suited to fruit growing. New Hampshire fruit possesses excellent flavor, good keeping qualities, and is capable of commanding the best prices in our home and foreign markets. The appearance of thrifty seedling apple trees growing along our road-ways and scattered through our pastures is evidence of the adaptability of this section for growing fruit trees. The New Hampshire farmer is giving closer study to orcharding than ever before. Orchards are better pruned and sprayed and kept in better condition in every way than formerly. This increased activity along orchard lines has increased the demands made upon the college and station for both information and assistance in orchard management. As many of our orchards are brought under cultivation questions naturally arise regarding intercropping and catch crops best suited to orchards, and many other timely important problems are presented for solution and advice. As rapidly as means permit tests are being made of these pressing orchard problems, not only at the station but in coöperation with commercial fruit growers in different localities.

Pruning and Spraying.—A line of orchard demonstration that seems to have met with favor during the past season is the orchard pruning and spraying demonstrations. These are held early in the spring in some centrally located orchards in localities where such instructions are requested.

Last spring fifteen of these demonstrations were given. They were well attended and apparently created much interest and were the means of spreading much valuable information in an effective way. The pruning and spraying is done out in the orchard in the presence of the farmers and under conditions that encourage free discussions and exchange of ideas. Nearly 1,200 people were in attendance at the orchard demonstrations held last year.

Dairy Extension Activities.—Dairy farming is regarded as being one of the most important lines of farming in New Hampshire. This is as it should be. Excellent markets are near at hand and the very nature of our land commends it to the keeping of live stock. Only 28.6 per cent. of the farm land is improved or tillage land, which goes to show that we must have large areas of broken rough land that should be available for pastures. A great deal of our farm land needs and will respond readily to applications of stable manure. Hence the extension service of the college is giving special attention to the subject of dairying, and is doing everything within its means to assist the New Hampshire farmer to realize a larger return for labor expended and money invested.

Dairy Cow-Test Associations.—Four dairy cow-test associations have been organized and are being conducted successfully. These test associations are important factors in bringing out the facts relating to the dairy business. Through these associations are gathered the facts and information which are fundamental to dairy progress. It is safe to say that at least one third of the cows in New Hampshire are being kept at a loss. These animals, while requiring practically as much food and labor to care for them as the profitable type of cows, not only do not bring in a profit themselves, but cut down the net returns which the farmer would otherwise receive from his herd.

But the work of these associations by no means stops here. The question of the proper and economical feeding

of a dairy herd is of equal importance. It is not only necessary to have an animal of capacity, but she must be fed economically. The New Hampshire farmer could well afford to raise much more of the grain fed to his stock than he is producing at the present time, and that is particularly true of the protein part, the most expensive part, of the feed given his herd. These associations frequently take up the coöperative buying of grain upon which marked savings can be made, and also the coöperative selling of dairy products.

Breeding Associations.—The extension service has also been identified with the organizing of two Holstein breeders associations. These associations are doing excellent work. They are not confining their efforts to the Holstein breed of cattle, but their influence extends to all classes of live stock. These coöperative associations are pointing the way to greater and better things agriculturally in our state.

Agricultural Reading Courses.—Agricultural reading courses have been offered in eight agricultural subjects and one in home economics. These courses have proved quite successful, about 300 having enrolled for the work. Owing to a lack of funds and assistants who could devote their time to this work, we have not attempted to prepare all of the lessons in these reading courses. We have adopted as a text-book those works that seemed to cover the subject in a most thorough, simple, and comprehensive way. We ask those who take up the courses to purchase this book. There is no other expense connected with taking up any of these courses. We recommend some reference books so that those who desire to do so can add them to their library; or where clubs are organized these books may be exchanged among the members of the club. In addition to the above, lists of state experiment station publications, farmers' bulletins, and other publications dealing with different phases of the courses are submitted for reference and study.

Some of the granges have conducted agricultural reading clubs as a part of their regular grange work and the courses have proved quite successful when carried on in that way.

A new use has recently developed for these reading courses which will undoubtedly prove to be the most effective of any that have been tried to date. We have an agricultural adviser in Sullivan county who is acting under the joint direction of the County Agricultural Association, the Bureau of Plant Industry, Washington, D. C., and the college. This agricultural adviser has organized local clubs where they are taking up these agricultural reading courses. The clubs hold meetings once in two weeks under the leadership of the county agricultural adviser. At these meetings are discussed the work studied and the relation of the subjects studied to their own farm operations. These meetings encourage a free discussion of all phases of the reading courses and tend to make the courses more interesting and helpful. This same plan is being followed where men are located in different counties carrying out the farm demonstration work which will be described a little later.

Special Days at the College.—We held at the college last year a Poultry day, an Orchard day, and a Dairy day. All of these meetings were well attended and much interest was manifested in the exercises.

Farmers' Picnic and Educational Meeting.—A farmers' picnic and educational meeting was held a year ago at the college as a part of the extension service, which was attended by about 2,000.

There was held on October 30, 1913, an Orchard day. Nearly 300 were in attendance, and about 300 plates of apples were sent in for the fruit exhibit aside from boxes, barrels, and the college fruit display.

All members of the college and station staff are sent out frequently to lecture and act as judges at grange meetings, to address boards of trade, and other gatherings. In this

way a great many people are reached during the course of the year in a direct, personal manner.

Extension Publications.—An important and far reaching line of the extension service activities has been the publishing of bulletins and circulars containing farm information for the average farmer. The regular station series of bulletins do not always meet the requirements of the farmer with respect to telling him how to do things. The experiment station is supported by federal funds which can be used only for the reporting of the results of research and cannot be used for publishing general information bulletins such as the farmer prefers to receive. We have published thirty-eight extension press bulletins during the past two years which have dealt with timely topics and supplied detailed information at the time when such information was desired by the farmer. Aside from sending these bulletins to the newspapers, they are sent to a mailing list of 11,000 in the state. Eleven extension circulars have also been issued. They have been very well received by those for whom the publications were prepared and we know from the many appreciative letters that have been received that these publications are accomplishing a lot of good and meeting an urgent demand. Two extension bulletins have been published—one on orcharding, and one on dairying, two of the important branches of New Hampshire agriculture. We have in preparation at the present time a number of publications which should be of special interest to the farmers of the state.

Farm Demonstrations.—This year there has been started some farm demonstration work in different parts of the state in coöperation with farmers which we believe will prove to be the most important step that has been taken in this state to advance agricultural education and its practical application. There is no more effective way of teaching approved agricultural practices than by demonstrating how the work should be done right out on the farm at dif-

ferent points in the state under conditions that are familiar to the farmers of that section. Seeing is believing and this is especially true of our farm work. The successful growing of a crop of corn, potatoes, hay or any other farm crop has an increased educational value if the work is carried out under conditions that are known and familiar to the people whom it is desired to reach. These facts have been too thoroughly demonstrated to make it necessary to cite examples.

Working on the theory that the practical demonstration of the subject on the farm is the most successful way of disseminating agricultural information, four farm demonstrators have been employed.

Orchard Demonstrations.—An orchard demonstrator is located in Hillsborough county, one of the best orchard counties of the state. He will devote his entire time to the study of the local orchard conditions and in carrying on definite forms of orchard demonstration work with some of the orchardists of the county.

Dairy Farm Demonstrations.—A man is located in Grafton county who is giving the dairy farm problems that need solution in that part of the state careful study. After having made a preliminary survey of the dairy conditions in the county and assisting in starting three cow-test associations, he is now taking up some definite lines of dairy farm demonstration work with twenty-six dairy farmers. These farmers own in the neighborhood of 900 cows. Careful records are being kept of all these animals by the farmers themselves, which is going a step farther than in the cow-test association work, where the farmers hire some one to make the records for them.

Boys' and Girls' Clubs.—Another man is organizing boys' and girls' club work in four of the counties in the southern part of the state. At first the work will be conducted with boys. The crops selected for the club work

will be corn and potatoes. We have selected these crops for club work because we want the boys to work with some of the every-day farm crops in order that they may learn that these crops can be grown at a profit, and that farming may be made a profitable business; that agriculture is an occupation worthy of their best efforts.

In other parts of the country the boys' club work has served another useful purpose; many times the parents have been reached through the boys' club work when they could not be approached in any other way. If a boy grows a larger yield of corn or one of better quality (the same would be true of any other crop), his parents are sure to be interested in his accomplishments and how they were brought about. If the method employed by the boy is a practicable and economical one, the boy's father is pretty sure to employ the same methods in growing his corn crop. This influence extends farther even than this. If the boy's father is likewise successful in growing a crop of corn that is superior to the ones grown in that locality, it is pretty sure to attract the attention of his neighbors, and they will look to him for seed and instructions as to how he was able to obtain such results. In this way the influence extends in an ever-widening circle and has in some states, where the work has been under way for a few years, practically revolutionized the growing of certain crops, especially corn, wheat, and cotton.

Soil Fertility and Crop Rotation.—Another man has been employed to work out some successful system of bringing back into a state of profitable production those neglected fields of which there are entirely too many in our state. Even though the tillage area of New Hampshire is small, making up less than 17 per cent. of the acreage of the state, it is quite a common practice among our small farmers, who have only a few head of live stock, to leave these fields sown down to grass for entirely too long a time, until they have become unproductive and bring in a very small revenue. It is possible to keep these fields in a high state of fertility

and hence they will be capable of producing better crops which can be grown more economically. It is to demonstrate some of these things that the soil fertility and crop rotation farm demonstration man will devote his efforts. This is, undoubtedly, one of the greatest problems that confronts the New Hampshire farmer today. It is fundamental to all other forms of farming; sooner or later we must come back to reckon with the problem of soil fertility. We cannot depend entirely upon the keeping of live stock to meet this demand, or at least it is not being done at the present time, and something else must be substituted in its place. We must give more attention and study to profitable systems of crop rotation and the kinds of crops that are grown in order to maintain and increase soil fertility, if we would even approach the possibilities of our New Hampshire soils, and it is hoped, through this farm demonstration work, not only to point out but to prove through demonstration the practicability of keeping these soils in an active state of profitable production. This soil fertility and crop rotation demonstration work will be carried on in coöperation with farmers in Rockingham and Strafford counties.

In spite of the progress which has already been made in developing the Extension Service of New Hampshire College it can be safely said that the work is only in its beginning. It is sure to be recognized and appreciated as one of the most important agencies at work in this state in the dissemination of practical, usable, and much-needed information toward the building up of a more prosperous agriculture, and hence a more contented, happy, and prosperous people.

DEGREES CONFERRED IN 1913.

MASTER OF SCIENCE.

Charles Farnum Whittemore, B.S. 1911.

ELECTRICAL ENGINEER.

Merton Maine Cory, B.S. 1908.

BACHELORS OF SCIENCE.

Agriculture.

Batchelder, Roy Eugene.
Eastman, Moses Gale.
Falconer, William Marshall.
Foster, Perley Addison.
Garland, Irving Robinson.
Joslyn, Clyde Frederic.
Kelley, Charles George.
Knight, Ray Hubert.
Ladd, John Everett.
Whiting, Paul Nathaniel.

Arts and Science.

Adams, Carroll Sidney.
Andrew, David Henry, Jr.
Batchelder, Charles Howard.
Bradford, Maurice Palmer.
Eastman, Wesley Edward.
Gillespie, Marion Emma.
Hamel, Vivian Blanche.
Hayden, Harry Eugene.
Hodgdon, Winifred.
Jenness, Augustine Watson.
Jenness, Chester Albert.
Jones, Philip Cowell.
Leavitt, Van Earle.
Locke, Harriet Esther.
Lord, Mabel Estelle.
McPheters, George Allen.
O'Connor, Regina.
Rogers, Charles Harold.
Sanborn, Ralph Moses.
Sanborn, Smith.
Scott, Charles Field.
Willard, Daniel Phineas Alston.

Chemical Engineering.

Keyes, Donald Babcock.
Lane, Gilbert Frederic.
Morgan, John Christie.
Robinson, Harold Averill.
Twomey, Thomas James.

Electrical Engineering.

Barrett, Lawrence Newton.
Beach, Robin.
Davis, Wesley Elton.
Hilliard, Leon Wilcomb.
Lang, Gilman Anjavine.
Paine, Nathan Deane.
Richmond, Alfred Leroy.
Tubman, Perry Elliot.

Mechanical Engineering.

Gale, Philroy Clifton.
Peavey, Harold Forrest.
Work, Clayton Wight.
Yates, James Black.

Unclassified.

Williams, Everett Cook.

Two-Year Certificates.

Barton, Charles Andrew.
Batchelder, Harry Conrad.
Bean, Benjamin Bickford.
Beaven, Clarence Theodore.
Blodget, Chester Buck.
Bodwell, Jonathan Moore.
Chase, Philip Leroy.
Cole, Warren Asa.
Converse, Carl Rondo.
Graham, Clifford Loyd.
Hardy, Charles Richardson.
Huse, Gordon Bancroft.
Pascoe, William Henry.
Richardson, Ellsworth Albie.
Robie, Albion Everett.
Robinson, William Henry.
Rutter, Everett Rogers.
Sawyer, Roscoe Alfred.
Smith, Albert Eaton.
Wear, Frank Gordon.

HONOR LIST FOR 1913.

SPECIAL HONOR.

Average of 90 for the year's work.

1913.

Moses Gale Eastman,	Agricultural Course.
Marion Emma Gillespie,	Arts and Science Course.
Winifred Hodgdon,	Arts and Science Course.
Donald Babcock Keyes,	Chemical Emgineering Course.

1914.

Frances Augusta Nudd,	Arts and Science Course.

1915.

Leland Whitney Crafts,	Arts and Science Course.
Marion Edgerly Nash,	Arts and Science Course.
Helen Waldron Plumer,	Arts and Science Course.

HONOR.

Average of 80 for the year's work.

1913.

David Henry Andrew, Jr.,	Arts and Science Course.
Charles Howard Batchelder,	Arts and Science Course.
Robin Beach,	Electrical Engineering Course.
Wesley Elton Davis,	Electrical Engineering Course.
Wesley Edward Eastman,	Arts and Science Course.
William Marshall Falconer,	Agricultural Course.
Harry Eugene Hayden,	Arts and Science Course.

Ray Hubert Knight,	Agricultural Course.
Gilman Anjavine Lang,	Electrical Engineering Course.
John Christie Morgan,	Chemical Engineering Course.
Harold Averill Robinson,	Chemical Engineering Course.
Charles Harold Rogers,	Arts and Science Course.
Ralph Moses Sanborn,	Arts and Science Course.
Thomas James Twomey,	Chemical Engineering Course.
Daniel Phineas Alston Willard,	Arts and Science Course.

1914.

Percival Moulton Blake,	Arts and Science Course.
Ray Warren Combs,	Agricultural Course.
Leroy Dexter Jesseman,	Agricultural Course.
Lloyd Stephen Riford,	Agricultural Course.
John Walter Taylor,	Arts and Science Course.
Wallace Whittier Wilder,	Agricultural Course.

1915.

Mario James Broggini,	Chemical Engineering Course.
Paul Edward Corriveau,	Agricultural Course.
Charles Wesley Davis,	Chemical Engineering Course.
Raymond Edson Dearth,	Agricultural Course.
Albert William Gamash,	Agricultural Course.
John Ingraham Garside,	Engineering Course.
John Leo Grady,	Engineering Course.
Alice Joanna Hoitt,	Arts and Science Course.
Anna Morse Hopkins,	Arts and Science Course.
Roland Hugh Kinder,	Arts and Science Course.
Esther Gladys McKone,	Arts and Science Course.
Earl Roger Montgomery,	Arts and Science Course.
Irving Chellis Story,	Arts and Science Course.
Walter Whittier Swett,	Agricultural Course.
Lena Vernice Waldron,	Arts and Science Course.
Pitt Sawyer Willand,	Chemical Engineering Course.

1916.

George Wilbur Burke,	Chemical Engineering Course.
Earle Joseph Carleton,	Chemical Engineering Course.
Genevieve Adrienne Jeannette Charbonneau,	Arts and Science Course.
Dura Prescott Crockett,	Agricultural Course.
Ralph Waldo Doeg,	Engineering Course.
Marion Grace Dudley,	Arts and Science Course.
Edward Deering Fuller,	Chemical Engineering Course.
Leon Abbott Hawkins,	Agricultural Course.
Wesley Everett Howard, Jr.,	Agricultural Course.
Stephen Guy Johnson,	Agricultural Course.
Marion Edwena Mitchell,	Arts and Science Course.

William Remick Partington,	Engineering Course.
Philip Pennell,	Chemical Engineering Course.
Vincent Aubert Perkins,	Agricultural Course.
Neil Abner Sargent,	Chemical Engineering Course.
Walter Ira Waite,	Chemical Engineering Course.

PRIZE RECORD FOR 1913.

BAILEY PRIZE—$10.

GIVEN BY DR. C. H. BAILEY, CLASS OF '79, AND E. A. BAILEY, CLASS OF '85.

DONALD B. KEYES, Durham.

ERSKINE MASON MEMORIAL PRIZE

WINIFRED HODGDON, Portsmouth.

CHASE-DAVIS MEMORIAL MEDALS.

Gold Medal.

PHILIP C. JONES, Milton.

Silver Medal.

ROBIN BEACH, Durham.

SENIOR STANDING HIGHEST IN THE MILITARY DEPARTMENT.

PHILROY C. GALE, Concord.

WINNERS OF INDIVIDUAL PRIZE DRILL.

Gold Medal.

ARNOLD J. GRANT, '15, Dover.

Silver Medal.

ESTON L. BLAKE, '16, Gilmanton.

Bronze Medal.

JOHN S. ELLIOTT, '15, Madbury.

PRIZE SABER—EXCELLENCE IN DRILL.

James A. Tufts, Jr., '14, Exeter.

Honorable Mention.

Timothy P. Reardon, '14, Concord.
John E. Davis, '14, Portsmouth.

SENIORS REPORTED TO THE ADJUTANT-GENERAL OF THE ARMY FOR APTITUDE IN DRILL.

Philroy C. Gale, Concord.
Charles H. Rogers, Exeter.
Thomas J. Twomey, Concord.

COLOR COMPANY—YEAR 1913-14.

Company C.

VALENTINE SMITH SCHOLARSHIPS.

Ray Warren Combs, '14.
Leland Whitney Crafts, '15.
Ralph Waldo Doeg, '16.
F. Dorotha Hatch, '17.

ROSTER OF BATTALION.

For 1913-1914.

COMMANDANT.

First Lieutenant C. A. Hunt, United States Infantry.

CADET OFFICERS AND NON-COMMISSIONED OFFICERS

FIELD AND STAFF.

Major, J. A. Tufts, Jr.
First Lieutenant, J. E. Davis, *Adjutant.*
Second Lieutenant, B. Woodward, *Quartermaster.*
Sergeant Major, B. B. Fernald.
Quartermaster Sergeant, J. L. Grady.
Color Sergeants, J. F. Hobbs, C. A. Reed.

Physical Director.

Second Lieutenant, C. G. Paulson.

BAND.

Chief Musician, M. J. Broggini.
Principal Musician, W. S. Bartlett.
Drum Major, A. L. Murdoch.

Sergeants.

J. H. Annis.
R. W. Garland.

Corporals.

E. L. Sanborn.
E. H. Downing.
C. A. Weigel.
F. S. Manter.
G. B. Arnold.

COMPANY A.

Captain, P. T. Sellers.
First Lieutenant, J. S. Elliott.
Second Lieutenant, C. W. Davis.
First Sergeant, R. E. Came.

Sergeants.

A. E. Bartlett.
R. C. Bowden.
W. I. Waite.
G. W. Burke.

Corporals.

W. J. Nelson.
M. R. McGreal.
L. W. Davis.
P. W. Watson.
V. A. Perkins.

Musician.

S. W. Dyer.

COMPANY B.

Captain L. D. Jesseman.
First Lieutenant, A. J. Grant.
Second Lieutenant, R. A. Knight.
First Sergeant, K. F. Rand.

Sergeants.

J. I. Garside.
H. L. Farnham.
R. H. Kinder.
S. H. Fogg.

Corporals.

E. L. Blake.
A. O. McCartney.
C. S. Pettee.
W. T. Tapley.
E. D. Fuller.

Musician.

L. F. Brown.

COMPANY C.

Captain, T. P. Reardon.
First Lieutenant, J. F. Thompson.
Second Lieutenant, P. S. Willand.
First Sergeant, E. E. Watson.

Sergeants.

W. F. Parker.
W. W. Swett.
W. H. Barr.
N. C. Hurd.

Corporals.

D. P. Crockett.
L. A. Hawkins.
G. W. Chase.
H. E. Swain.
K. E. Sawyer.

Musician.

H. S. Brown.

COMPANY D.

Captain, F. C. Smith.
First Lieutenant, T. P. Dustin.
Second Lieutenant, P. E. Corriveau.
First Sergeant, J. A. Dodge.

Sergeants.

G. C. Bishop.
H. G. Woodman.
A. E. Mosher.
R. H. Bissell.

Corporals.

E. J. McKenzie.
C. R. Daniels.
W. Marat.
C. D. Gummerson
L. A. Merrill.
W. T. Phair.

Musician.

E. Little.

STUDENTS.

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a. h. and *d.*—Animal Husbandry and Dairy course; *for.*—Forestry course; *hort.*—Horticultural course; *gen. a.* —General Agricultural course; Freshmen and Sophomores in the agricultural course are designated by *a.* only. *c.*—Chemical Engineering course; *m. e.*—Mechanical Engineering course; *e. e.*—Electrical Engineering course; Freshmen,

Sophomores and Juniors in the electrical and mechanical engineering courses are designated by *e.* only; *a.* and *s.*—General Arts and Science course; *h. e.*—Home Economics course; *m. a.*—Mechanic Arts course; *u.*—Unclassified.

GRADUATE STUDENTS.

Name.	P. O. Address.
Batchelder, Charles Howard, B.S.	*Seabrook.*
Holden, Hiram Chester, B.S.	*Manchester.*
Templeton, Marion Elizabeth, A.B.	*Exeter.*

SENIORS.

Name.	P. O. Address.
Annis, John Harold, *a.* and *s.*	*Manchester.*
Bent, Horace Victor, *a. h.* and *d.*	*Durham.*
Bissell, Don Warren, *c.*	*Keene.*
Blake, Percival Moulton, *a.* and *s.*	*Hampton.*
Brackett, William Henry Langdon, *a.* and *s.*	*Greenland.*
Combs, Ray Warren, *hort.*	*Hampton Falls.*
Davis, John Edgar, *a.* and *s.*	*Portsmouth.*
Dresser, Clarence Jewell, *e. e.*	*Berlin.*
Eastman, Harold Moses, *c.*	*Franklin.*
Garland, Russell White, *m. a.*	*Manchester.*
Halvorsen, George Arthur, *a.* and *s.*	*Berlin.*
Ham, Guy Leslie, *c.*	*Tuftonborough.*
Heath, Carroll Richard, *c.*	*South Danville.*
Jesseman, Leroy Dexter, *gen. a.*	*Franconia.*
Krook, William Cleon, *a.* and *s.*	*Durham.*
Ladd, Daniel Watson, Jr., *a.* and *s.*	*Epping.*
McCartney, Howard Ranson, *a.* and *s.*	*Kingston.*
McCrillis, Neal, *gen. a.*	*Whiteface.*
Neal, Cecil Maurice, *a.* and *s.*	*Portsmouth.*
Nudd, Frances Augusta, *a.* and *s.*	*Hampton.*
Osgood, Wilfred Albro, *a.* and *s.*	*Windham.*
Perkins, Gerald Nye, *e. e.*	*Claremont.*
Pinkham, Valentine, *a.* and *s.*	*Dover.*
Place, Walter Roy, *m. e.*	*Alton.*
Reardon, Timothy Patrick, *a.* and *s.*	*Concord.*
Riford, Lloyd Stephen, *a. h.* and *d.*	*Lakeport.*
Sanborn, Howard Weaver, *u.*	*Lochmere.*
Sellers, Paul Thornton, *a.* and *s.*	*Franklin.*
Smart, Raymond Woodus, *e. e.*	*Dover.*
Smith, Fred Carl, *e. e.*	*Durham.*
Taylor, John Walter, *a.* and *s.*	*North Walpole.*

Name.	P. O. Address.
Tufts, James Arthur, Jr., *u.*	*Exeter.*
Wilder Wallace Whittier, *gen. a.*	*Durham.*
Woodward, Bernard, *e. e.*	*Lancaster.*
Yaxis, Themistocles George, *gen. a.*	*Kingston.*

JUNIORS.

Name.	P. O. Address.
Arthur, Walter Edward, *e.*	*Manchester.*
Bartlett, Arnold Eastman, *a.* and *s.*	*Manchester.*
Bartlett, William Sanborn, *e.*	*Manchester.*
Bean, Raymond Jackson, *a.* and *s.*	*Laconia.*
Bonardi, Jack, *c.*	*Lebanon,*
Bowden, Raymond Charles, *a.* and *s.*	*York Beach, Me.*
Broggini, Mario James, *c.*	*Milford.*
Bronson, Forrest Dinsmore, *a.* and *s.*	*Lisbon.*
Brown, Leon Frank, *gen. a.*	*Rochester.*
Came, Ralph Elbert, *a.* and *s.*	*Rochester.*
Clark, Byron Humphrey, *a.* and *s.*	*Manchester.*
Corriveau, Paul Edward, *hort.*	*Concord.*
Crafts, Leland Whitney, *a.* and *s.*	*Newfields.*
Davis, Charles Wesley, *c.*	*Concord.*
Dearth, Raymond Edson, *a. h.* and *d.*	*North Haverhill.*
Dustin, True Page, *e.*	*Berlin.*
Elliott, John Spaulding, *a. h.* and *d.*	*Madbury.*
Emerson, Stuart Baker, *a.* and *s.*	*Lebanon.*
Farnham, Harry Lothrop, *e,*	*Dover.*
Fernald, Brackett Britton, *gen. a.*	*Rochester.*
Fogg, Sherburne Hilliard, *for.*	*Durham.*
Gamash, Albert William, *for.*	*Manchester.*
Garside, John Ingraham, *e.*	*Dover.*
Grady, John Leo. *e.*	*Dover.*
Grant, Arnold Jay, *c.*	*Dover.*
Haines, Ray Edward, *m. a.*	*Lakeport.*
Halvorsen, Henry Olaf, *a.* and *s.*	*Berlin.*
Hobbs, James Francis, Jr., *a.* and *s.*	*North Hampton.*
Hoitt, Alice Joanna, *a.* and *s.*	*Durham.*
Hoitt, Carrie Elizabeth, *a.* and *s.*	*Durham.*
Hopkins, Anna Morse, *a.* and *s.*	*Lakeport.*
Jenkins, Everett Kelly, *m. a.*	*Loudon.*
Key, Yuling George, *c,*	*Shanghai, China.*
Kinder, Roland Hugh, *a.* and *s.*	*Marlborough.*
Knight, Richard Adams, *m. a.*	*West Concord.*
Langley, Lester Libbey, *a.* and *s.*	*Durham.*
Loomis, Glenn Moore, *e.*	*Goffs Falls.*

Name.	P. O. Address.
McCartney Arthur Orcutt, *a. h.* and *d.*	*Kingston.*
McKone, Esther Gradys, *a.* and *s.*	*Dover.*
Montgomery, Earl Roger, *a.* and *s.*	*Contoocook.*
Murdoch, Armand Leigh, *a.* and *s.*	*Dover.*
Murphy, Mary Frances, *a.* and *s.*	*Somersworth*
Nash, Marion Edgerly, *a.* and *s.*	*Dover.*
Odiorne, Benjamin Gilbert, *a.* and *s.*	*Rye.*
Paige, Laura Jane, *a.* and *s.*	*Goffstown.*
Parker, Walter Francis, *a.* and *s.*	*Antrim.*
Paulson, Carl Gustav, *e.*	*Berlin Mills.*
Plumer, Helen Waldron, *a.* and *s.*	*R. D., Dover.*
Reed, Clinton Arthur, *a.* and *s.*	*Manchester.*
Sawyer, Clifford Augustus, *a. h.* and *d.*	*Atkinson.*
Story, Irving Chellis, *a.* and *s.*	*Claremont.*
Studd, George Thomas, *a.* and *s.*	*Berlin.*
Swett, Walter Whittier, *a. h.* and *d.*	*Gossville.*
Thompson, John Fawdrey, *c.*	*Tilton.*
Waldron, Lena Vernice, *a.* and *s.*	*Center Strafford.*
Welsh, Russell Hamilton, *gen. a.*	*Exeter.*
Willand, Pitt Sawyer, *c.*	*Dover.*

SOPHOMORES.

Name	P. O. Address
Archibald, Clyde Warren, *e.*	*Portsmouth.*
Barr, William Henry, *e.*	*Durham.*
Blake, Eston Lloyd, *a.*	*Durham.*
Brown, Harold Sunderlin, *m. a.*	*Manchester.*
Brown, Lloyd Ridley, *a.* and *s.*	*Concord.*
Brown, Oscar Choate, *c.*	*Lebanon.*
Bugbee, Ralph Josiah, *a.*	*Claremont.*
Burbee, Clifford Hardy, *a.* and *s.*	*Nashua.*
Burke, George Wilbur, *c.*	*Concord.*
Burt, Perry Warren, *a.*	*Westmoreland.*
Chamberlain, Walter E., *a.*	*Durham.*
Charbonneau, Genevieve Adrienne Jeannette, *a.* and *s.*	*Nashua.*
Chase, Guy Wetherbee, *m. a.*	*Londonderry.*
Coffin, Alice Veva, *h. e.*	*Boscawen.*
Crockett, Dura Prescott, *a.*	*New London.*
Crouch, Leon Meader, *e.*	*R. D., Durham.*
Davis, Leland Worthen, *e.*	*Concord.*
Diettrich, Rosina Martha, *a.* and *s.*	*Hampton.*
Doeg, Ralph Waldo, *e.*	*Exeter.*
Downing, Edward Hugh, *m. a.*	*Alton Bay.*

Name.	P. O. Address.
Dudley, Florence Lillian, *a.* and *s.*	*Reed's Ferry.*
Dudley, Marion Grace, *a.* and *s.*	*R. D. 1, Newmarket.*
Dwight, Bernard Henry, *a.* and *s.*	*Manchester.*
Dyer, Stephen Webster, *a.*	*Lawrence, Mass.*
Ellsworth, Frank Drew, *a.*	*Pembroke.*
Finley, Nettie Edith Austin, *a.* and *s.*	*Dover.*
Flanders, Mildred Maleham, *a.* and *s.*	*Rochester.*
Fuller, Edward Deering, *c.*	*Atkinson.*
Goodwin, Daniel Henry, *a.*	*Hollis*
Hadley, John Corbin, *a.*	*Durham.*
Hallisey, Helen Agnes, *a.* and *s.*	*Nashua.*
Hawkins, Leon Abbott, *a.*	*Plymouth.*
Hayden, Philip A., *a.*	*Hollis.*
Hayes, Robert Foss, *e.*	*R. D., Dover.*
Howard, Wesley Everett, Jr., *a.*	*Belmont.*
Hurd, Norman Cannavan, *e.*	*Dover.*
Jenness, Marion Ruth, *a.* and *s.*	*Dover.*
Johnson, Stephen Guy, *a.*	*Winchester.*
Jones, Flavia Locke, *a.* and *s.*	*Exeter.*
Kelley, Everette Harmon, *a.*	*Barnstead.*
Kidder, Harold Soule, *c.*	*Durham.*
Lary, John Dana, Jr., *e.*	*Berlin.*
McCartney, Robert Irving, *a.* and *s.*	*Kingston.*
McDuffee, Edward Clarence, *e.*	*Claremont.*
McGreal, Michael Reilly, *a.* and *s.*	*Somersworth.*
Manter, Frederick Sanford, *e.*	*Manchester.*
Mazmanian, Misak Minas, *a.*	*Durham.*
Mitchell, Marion Edwena, *a.* and *s.*	*Newmarket.*
Morse, Stephen Noyes, *e.*	*Ashland.*
Nelson, George Albert, *a.* and *s.*	*Exeter.*
Nelson, Westly Joseph, *a.*	*Manchester.*
Parker, Ralph Harthan, *a.* and *s.*	*Kingston.*
Partington, William Remick, *e.*	*Portsmouth.*
Pennell, Philip, *c.*	*Gossville.*
Perkins, Vincent Aubert, *a.*	*Claremont.*
Pettee, Charles Swett, *a.* and *s.*	*Durham.*
Philbrick, Leonard Parker, *a.* and *s.*	*North Hampton.*
Poland, Nellie Guild, *h. e.*	*Lebanon.*
Purington, James Alson, *a.*	*Hopkinton.*
Reed, Bernice, *a.* and *s.*	*Grantham.*
Robinson, Lewis Byron, *a.*	*R. D., Concord.*
Runnals, Herbert Richard, *a.*	*West Lebanon.*
Sanborn, Eldred Louis, *m. a.*	*Lochmere.*
Sargent, Neil Abner, *c.*	*Concord.*

Name.	P. O. Address.
Sawyer, Kenneth Earl, *e.*	*Manchester.*
Scruton, Herbert Ambrose, *e.*	*Dover.*
Smith, Robert Carl, *a.* and *s.*	*Exeter.*
Smith, Victor Haskell, *a.*	*Hudson.*
Steele, Harold Arthur, *a.* and *s.*	*Manchester.*
Sullivan, Joseph Albert, *a.*	*Dover.*
Swain, Howard Eugene, *e.*	*Exeter.*
Swett, Earle Frederick, *a.* and *s.*	*Andover.*
Tapley, William Thorpe, *a.*	*Revere, Mass.*
Torrey, Robert Jordan, *a.* and *s.*	*Putnam, Conn.*
Waite, Walter Ira, *c.*	*Concord.*
Waldron, Carroll Charles, *m. a.*	*Center Strafford.*
Waldron, Etta Seward, *a.* and *s.*	*Center Strafford.*
Ward, Paul Stanwood, *a.* and *s.*	*Nashua.*
Watson, Earle Elwin, *a.*	*Durham.*
Watson, Philip Wilder, *m. a.*	*Durham.*
Weigel, Charles Adolph, *a.*	*Durham.*
White, Nellie Lydia, *a.* and *s.*	*Enfield.*
Whitehead, Carl Rollins, *e.*	*South Berwick, Me.*
Wilson, John Parker, *a.* and *s.*	*Lancaster.*
Work, Olin Charles *m. a.*	*Exeter.*
Yeaton, Russell Stewart, *a.*	*Short Falls.*

FRESHMEN.

Name	P. O. Address
Anderton, Thomas Richard, *c.*	*Dover.*
Andrews, Wayland Francis, *c.*	*Newburyport, Mass.*
Basch, Goldie, *a.* and *s.*	*Ashuelot.*
Batchelor, Vance Whiting, *a.* and *s.*	*West Upton, Mass.*
Bennett, Frank Powers, *c.*	*Northwood.*
Blanchard, Phyllis Mary, *a.* and *s.*	*Epping.*
Bond, Charles Chester, *a.* and *s.*	*Lisbon.*
Boutwell, Leroy Arthur, *e.*	*Hopkinton*
Brackett, Josephine Edwards, *h. e.*	*Concord.*
Brown, Willard Irving, *a.*	*R. D., Ashland.*
Burleigh, Arthur Samuel, *e.*	*Ossipee.*
Burpee, Louise Elizabeth, *h. e.*	*Manchester.*
Caldwell, William Rice, *a.* and *s.*	*Peterborough.*
Carlisle, Sumner, *a.* and *s.*	*Exeter.*
Caswell, Henry Benson, *c.*	*R. D., Barnstead.*
Chase, Marion Olive, *a.* and *s.*	*Seabrook.*
Cilley, Melissa Annis, *a.* and *s.*	*Colebrook.*
Clark, Malcolm Barrett, *a.*	*Bethlehem.*

Name.	P. O. Address.
Cochran, Olin John, *a.*	*Windham Depot.*
Colby, Rachel Clarenda, *h. e.*	*New Boston.*
Colomy, James Daniel, *a.*	*Durham.*
Conner, Bessie Freda, *h. e.*	*Exeter.*
Connor, Aloysius Joseph, *e.*	*Manchester.*
Crandall, Flora Lou, *h. e.*	*Lebanon.*
Cutts, Elmer Frank, *e.*	*Manchester.*
Dixon, Charles Albert, *a.* and *s.*	*Rochester.*
Dudley, William Allen, *e.*	*Colebrook.*
Dustin, Clifton Henry, *e.*	*Rochester.*
Evans, George Everett, *c.*	*East Kingston.*
Ewer, Natalie Drew, *a.* and *s.*	*Dover.*
Fall, Beatrice Louise, *a.* and *s.*	*Dover.*
Fernald, Alice, *h. e.*	*Dover.*
Fernald, Isabel Jane, *h. e.*	*Dover.*
Fitch, Frank Williams, *a.*	*R. D., Windsor, Vt.*
Foss, George Harold, *a.* and *s.*	*Warner.*
French, Roger Lee, *c.*	*Plymouth.*
Frisbee, Joseph Elliot, *e.*	*Portsmouth.*
Gilson, Marion Susan, *h. e.*	*Windham.*
Glidden, Chester Willis, *c.*	*Alton Bay.*
Graham, Clifford Lloyd, *a.*	*Candia.*
Graham, Roy Charles Lemach, *a.*	*Candia.*
Griffin, Philip Joseph, *c.*	*Portsmouth.*
Hardy, Verna Carola, *a.* and *s.*	*Concord.*
Harriman, Nathaniel Joy, *a.* and *s.*	*Laconia.*
Haseltine, Franklin L., *a.*	*Reed's Ferry.*
Hatch, Frances Dorotha, *a.* and *s.*	*Exeter.*
Hodgdon, Robert Edgar, *e.*	*Rochester.*
Hoyt, Willis H., *a.*	*Newington.*
Hubbard, Guy, *e.*	*Windsor, Vt.*
Jenkins, Harvey Foss, *a.*	*Manchester.*
Johnson, Ellsworth Sheldon, *a.*	*Springfield, Vt.*
Johnson, Myrtle May, *a.* and *s.*	*Reed's Ferry.*
Johnson, Sadie Brown, *h. e.*	*Petersham, Mass.*
Knox, Warren Penn, *a.*	*Dover.*
Lake, Leroy Moses, *a.*	*Brentwood.*
Lambert, Eleanor Hurst, *a.* and *s.*	*Durham.*
Langley, Mary Anthony, *h. e.*	*Durham.*
Little, Harold Benjamin, *a.*	*Colebrook.*
Lombard, Carl Weston, *c.*	*Newburyport, Mass.*
Long, Edward, *c.*	*R. D., Dover.*
Lord, Eugene Hodgdon, *e.*	*Hopkinton.*
Lumsden, Florence, *h. e.*	*Durham.*

Name.	P. O. Address.
McDonald, James Murdo, *a.* and *s.*	*Hanover.*
McKone, Bernice Stearns, *h. e.*	*Dover.*
Mack, Lillian Wallace, *h. e.*	*Derry.*
Meserve, Harlan Ray, *a.* and *s.*	*Rochester.*
Miller, George Willard, *a.*	*South Berwick, Me.*
Moore, William Edward, Jr., *a.*	*R. D., Exeter.*
Morgan, Arthur Richardson, *a.*	*Durham.*
Morrill, Moses Winthrop, *e.*	*Berwick, Me.*
Nelson, Rufus Lawrence, *e.*	*Tilton.*
Nichols, Earle Brazil, *a.*	*Newton.*
Nixon, Leonard Russell, *a.*	*R. F. D. Exeter.*
Nudd, Henrietta Carleton *h. e.*	*Hampton.*
O'Brien, William Henry, *e.*	*Walpole.*
Page, George Haines, *a.* and *s.*	*Dover.*
Parnell, George Downes, *e.*	*Manchester.*
Pitman, Ralph Read, *a.* and *s.*	*Durham.*
Poland, Charles Wesley, *a.*	*Lebanon.*
Reed, Beatrice, *h. e.*	*Grantham.*
Roberts, Julia Aurelia, *h. e.*	*Durham.*
Roberts, Ray Towle, *e.*	*West Concord.*
Robinson, Harold Chester, *a.*	*Manchester.*
Robinson, Nathaniel Edwin, *a.* and *s.*	*R. D., Concord.*
Rollins, John Hooper, *c.*	*Dover.*
Ross, Edgar Samuel, *e.*	*Nashua.*
Russell, Hansel Arthur, *a.*	*Lebanon.*
Shannon, Clarice Henrietta, *h. e.*	*Laconia.*
Sinclair, Philip Raymond, *e.*	*Ossipee.*
Smith, Albert Eaton, *a.*	*Hudson.*
Steuerwald, Alberta Neal, *h. e.*	*Dover.*
Stevens, Clark Leavitt, *a.*	*Colebrook.*
Sussman, Joseph Abraham, *c.*	*Portsmouth.*
Tebbetts, Marion Ruth, *h. e.*	*Berwick, Me.*
Thomas, William Hervey, *a.*	*Franconia.*
Tibbetts, Carleton Briggs, *c.*	*Somersworth.*
Tilton, Helen Florence, *h. e.*	*Auburn.*
Turcotte, Abby Jewett, *h. e.*	*Lakeport.*
Ubertini, Umberto, *a.*	*Durham.*
Wentworth, Sidney Warren, *a.*	*Hollis.*
Weston, Fred Webster, *a.* and *s.*	*Lisbon.*
Weston, Helen Brown, *h. e.*	*Lisbon.*
Westover, Kyle Chester, *a.*	*Manchester.*
Wheeler, George Arthur, *a.*	*Petersham, Mass.*
Whitham, Frederick, *e.*	*Berlin.*
Whittemore, Arthur Benjamin, *a.* and *s.*	*Colebrook.*

Name.	P. O. Address.
Wiggin, Edwin Albert, *e.*	*Exeter.*
Wiggin, Rohl Chase, *c.*	*Concord.*
Wildey, Paul Brooks, *a.* and *s.*	*Meriden.*
Worcester, Mary Abbie, *h. e.*	*Berwick, Me.*

SPECIALS.

Name	P. O. Address
Baghdigian, Bagdasar Krekor,	*Chester.*
Curry, Myrtle,	*Bloomington, Ind.*
Fairchild, Louise May,	*Durham.*
Hayes, John Paul, Jr.,	*R. D. Dover.*
Kendall, Marjorie Foster,	*Durham.*
Rand, Karl Fowler,	*Short Falls.*
Sawyer, Elizabeth Coffin,	*Dover.*
Scott, Susie Helen,	*Durham.*
Varney, Wallace Gallinger,	*Dover.*

TWO-YEAR COURSE.

Second Year.

Name.	P. O. Address.
Arnold, Francis Herbert,	*North Pembroke, Mass.*
Arnold, George Bartlett,	*Stoneham, Mass.*
Ayer, Ross Alvin,	*Marlow.*
Bishop, Clifton Louis,	*Lisbon.*
Bishop, George Cornelius,	*Center Sandwich.*
Bissell, Ralph Howard,	*Keene.*
Brailsford, Albert,	*Durham.*
Cram, Arthur T.,	*Clinton Grove.*
Daniels, Carleton Richards,	*Durham.*
Dodge, James Arthur,	*Concord.*
Dodge, Rodney Marston,	*Beverly, Mass.*
Farrington, Wendell Maynard,	*Milton, Mass.*
Groves, Reuben Spaulding,	*R. D., Nashua.*
Gummerson, Claron D.,	*Jaffrey*
Holmes, Russell Herbert,	*Charlestown.*
Jaquith, Hollis Proctor,	*New Ipswich.*
Jaquith, Milo Warren,	*New Ipswich.*
Lane, Harold William,	*Lancaster.*
McCarten, William Leonard,	*Lancaster.*
McKenzie, Edward J.,	*Franconia.*
Marat, Walter,	*Durham.*
Merrill, Leonard Abbott,	*Antrim.*

Name.	P. O. Address.
Mosher, Albert Erlon,	*Gorham, Me.*
Nelson, Ernest S.,	*Mill Village.*
Paul, Edward Alexander,	*Meredith.*
Phair, William Thomas,	*Warren.*
Woodman, Harold Graham,	*Durham.*

First Year.

Alexander, Arthur Lloyd,	*Sunapee.*
Allen, Arthur Volney,	*R. D., Manchester.*
Allen, Merritt,	*Spofford.*
Bennett, Ellwood Vance,	*Laconia.*
Brackett, Edwin L.,	*Concord.*
Brackett, Ralph de Rochemont,	*Greenland.*
Campbell, George William,	*Exeter.*
Chadwick, Paul Archie,	*North Sutton.*
Clow, Arthur Stephen,	*East Wolfeboro.*
Colprit, James Elwin,	*R. D., Dover.*
Cram, Theodore Francis,	*Durham.*
Crosby, Robert Frank,	*Francestown.*
Cross, Kenneth John,	*Manchester.*
Cummings, Charles,	*Colebrook.*
Field, Paul Joseph,	*Nashua.*
Green, Henry Lawrence, Jr.,	*Portsmouth.*
Green, Philip Burleigh,	*Portsmouth.*
Green, Sidney James,	*Munsonville.*
Hale, Henry Matthew,	*Wolfeboro.*
Hall, Elmer Oliver,	*West Lebanon.*
Hall, Robert Hancock,	*Waverley, Mass.*
Harriman, Samuel R.,	*Colebrook.*
Hartt, John,	*Newport.*
Hayes, Allen Nowell,	*R. D., Dover.*
Hazen, Gardner Williamson	*Andover.*
Humiston, Frank,	*East Jaffrey.*
Huse, Raymond Warren,	*Manchester.*
Jones, Ralph Walter,	*Concord.*
Keep, John Marcus,	*North Conway.*
Kennett, Clarence Ralph,	*Silver Lake.*
LaPoint, William,	*Spofford.*
Learmonth, John Gullion,	*Salem Depot.*
Little, Edgar,	*Webster.*
McCabe, Leslie Walker,	*Henniker.*
McClure, Kenneth Donald,	*Munsonville.*
McKenzie, Robert J.,	*Franconia.*
McMahon, Martin Francis,	*Concord.*

Name.	P. O. Address.
Marden, Ralph Wilson,	*Newton.*
Miller, Charles Frank,	*Lawrence, Mass.*
Morse, Oscar Varnum,	*E. Hebron.*
Moss, Harold,	*Wolfeboro.*
Osborne, John Fred,	*R. D., Pittsfield,*
Perkins, James Fiske,	*Marlow.*
Price, Fishel,	*Wolfeboro.*
Redden, Dennis Christophor,	*Dover.*
Runnals, George Alvin,	*West Lebanon.*
Sanborn, Alfred Natt,	*Auburn.*
Sawyer, Maurice Wade,	*Lakeport.*
Seymour, George Walter,	*Pierce Bridge.*
Smith, Perley Jaques,	*Lochmere.*
Tibbetts, Alvah Herbert,	*East Wolfeboro.*
Tourtelotte, Ernest Allen,	*Mason.*
Weston, Franklin Willoughby,	*Hudson.*
Whalin, Robert Alden,	*Greenfield.*
White, Chancey Walter,	*R. F. D., Concord.*
Whittier, Edward Mitchell,	*Franklin.*
Willand, Howard,	*North Wolfeboro.*
Yunggebauer, Gustave Emmert,	*South Merrimack.*

COURSES IN FRUIT GROWING AND DAIRYING.

Name.	P. O. Address.
Balch, Ralph West,	*Lyme.*
Berry, Arnold Parker,	*Portsmouth.*
Clement, Ruth Ethel,	*East Deering.*
Colson, C. Burton,	*Goffstown.*
Drown, Lawrence W.,	*Lyman, Me.*
Eastman, Ellsworth S.,	*East Andover.*
Evans, Albert Marble,	*Rye.*
Hill, Theodore Robert,	*Concord.*
Hird, John S.,	*Salem Depot.*
Mears, Fred H. B.,	*Derry Village.*
Moore, Thomas E.,	*Boscawen.*
Murphy, William,	*Peterborough.*
Owens, Alfred W.,	*Haverhill, Mass.*
Sherbut, Ralph Samuel,	*Newton.*
Taylor, Harry Eugene,	*Epping.*
Thorsell, Russell Clarence,	*Exeter.*
Wear, Charles A.,	*Pittsfield.*
Wheeler, Merton,	*Gilsum.*

TEN-WEEK COURSE, 1913.

Name.	P. O. Address.
Hawkes, Ferdinand W.,	*Westbrook, Me.*
Libby, Albert J.,	*Roxbury, Mass.*
White, Clifford E.,	*Gilsum.*
Yeaton, John Beecher,	*Hampton.*

SUMMARY.

Graduate Students	3
Seniors	35
Juniors	57
Sophomores	86
Freshmen	110
Special Students	9
Students in Two-Year Course	85
Students in Fruit Growing and Dairying	18
Students in One-Week Course	352
Total	755
Total (not including One-Week Course)	403

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Rumford

VOLUME VI

LIBRARY OF THE UNIVERSITY OF ILLINOIS
23 APR 1915

NUMBER 2

The New Hampshire College Catalogue

1915-1916

FORTY-SEVENTH YEAR

THE LIBRARY OF THE
JUL 29 1936
UNIVERSITY OF ILLINOIS

Durham, New Hampshire
Published by the College

LIBRARY
OF THE
UNIVERSITY OF ILLINOIS
23 APR 1915

The New Hampshire College of Agriculture and the Mechanic Arts Bulletin

Durham, New Hampshire

THE LIBRARY OF THE
JUL 29 1936
UNIVERSITY OF ILLINOIS

APRIL, 1915

Entered as second class matter, August 5, 1907, at the Post Office at Durham, N. H., under the Act of Congress of July 16, 1894

CALENDAR

1915

JANUARY.

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1916

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COLLEGE CALENDAR.

1915

Entrance examinations, beginning at 8.30 a. m.	*Tuesday, September 7.*
Registration day. First semester begins	*Wednesday, September 15.*
Address to student body	*Thursday, September 16.*
Columbus Day, a holiday	*Tuesday, October 12.*
Stated meeting of trustees	*Wednesday, October 13.*
College closes at noon	*Wednesday, November 25.*
College opens at noon	*Monday, November 29.*
College closes at 4 p. m.	*Tuesday, December 21.*

1916

College opens at 8 a. m.	*Tuesday, January 4.*
Stated meeting of trustees	*Wednesday, January 12.*
Mid-year examinations	*Thursday, January 27, through Tuesday, February 1.*
Registration day. Second semester begins	*Thursday, February 10.*
Washington's Birthday, a holiday .	*Tuesday, February 22.*
No exercises after 10 a. m. . . .	*Tuesday, March 14.*
Stated meeting of trustees	*Wednesday, April 12.*
College closes at 4 p. m.	*Tuesday, April 18.*
College opens at 8 a. m.	*Tuesday, April 25.*
Graduation of two-year course . .	*Wednesday, May 17.*
Memorial Day, a holiday	*Tuesday, May 30.*
Senior examinations completed at 4 p. m.	*Tuesday, June 6.*
Final examinations	*Wednesday, June 7, through Monday, June 12.*
Baccalaureate sermon at 10.45 a. m. .	*Sunday, June 11.*
Prize drill, in the armory at 8 p. m. .	*Monday, June 12.*
Class day. Stated meeting of trustees	*Tuesday, June 13.*
Commencement day	*Wednesday, June 14.*
*Entrance examinations, beginning at 8.30 a. m.	*Tuesday, June 27.*

*Candidates taking the June entrance examinations have an opportunity by so doing to compete for the Valentine Smith scholarship. See page 13.

BOARD OF TRUSTEES.

His Excellency, Governor ROLLAND H. SPAULDING, *ex-officio.*

President EDWARD T. FAIRCHILD, A.M., LL.D., *ex-officio.*

*Hon. HARVEY L. BOUTWELL, B.S., LL.D., Malden, Mass. *President.*
Sept. 1, 1911, to Sept. 1, 1917.

Hon. JAMES A. TUFTS, A.B., Exeter, *Secretary.*
Jan. 10, 1914, to June 14, 1916.

Hon. WALTER DREW, Colebrook.
Aug. 30, 1902, to Aug. 30, 1917.

*Hon. EDWARD H. WASON, B.S., Nashua.
Jan. 16, 1906, to July 1, 1916.

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Dec. 2, 1908, to Dec. 2, 1917.

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May 13, 1909, to Oct. 9, 1915.

Hon. WILLIAM H. CALDWELL, B.S., Peterborough.
July 29, 1912, to July 29, 1915.

Hon. JOHN W. PRENTISS, Alstead.
Jan. 10, 1914, to June 14, 1916.

Hon. WILLIS McDUFFEE, A.B., Rochester.
Jan. 10, 1914, to June 14, 1916.

Hon. DANA J. BROWN, Ossipee.
July 17, 1914, to July 17, 1917.

Hon. EUGENE S. DANIELL, Greenland.
Dec. 31, 1914, to Oct. 7, 1915.

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WALTER M. PARKER, A.B., *Treasurer.*

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CHARLES W. STONE, A.M., *Superintendent of Farm.*

OSCAR W. STRAW, *Superintendent of Power and Service and Curator of Buildings.*

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OREN V. HENDERSON, *Business Secretary.*

*Elected by the Alumni Association.

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BEULAH M. MADDOX, *Stenographer.*

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WALTER C. O'KANE, A.M., *Professor of Economic Entomology.*
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JOSEPH H. GOURLEY, B.S., *Professor of Horticulture.*
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HELEN B. THOMPSON, M.S., A.M., *Professor of Home Economics and Dean of Women.*
JOHN C. KENDALL, B. S., *Director of Experiment Station and Extension Work.*

*The faculty is composed of the president of the college, full professors, associate professors, assistant professors, and the director of the experiment station and of extension work.
†Arranged in order of seniority of appointment.

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ERIC T. HUDDLESTON, B. ARCH., *Professor of Drawing and Design.*
SAMUEL J. SUTHERLAND, First Lieutenant U. S. Infantry, *Professor of Military Science and Tactics.*

ASSOCIATE PROFESSOR.

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FREDERICK W. WHITMAN, A.B., *Assistant Professor of Modern Languages.*
CHARLES C. STECK, A.B., M.S., *Assistant Professor of Mathematics.*
CAROLINE A. BLACK, Ph.D., *Assistant Professor of Botany.*
ROBERT V. MITCHELL, B.S., *Assistant Professor of Animal Husbandry in charge of Poultry.*
HAROLD H. SCUDDER, B.S., *Assistant Professor of English.*

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W. ROSS WILSON, B.S. (Agr.), *Instructor in Dairying.*
JAMES H. PHILBRICK, *Instructor in Woodworking and Foundry Work.*
JAMES H. CAHILL, *Instructor in Machine Work and Forging.*
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FORD S. PRINCE, B.S., *Instructor in Agronomy.*
JOHN B. SCHERRER, B.S., *Instructor in Vegetable Gardening.*
CLEMENT MORAN, A.B., *Instructor in Physics.*
JOHN E. LADD, B.S., *Herdsman and Instructor in Animal Husbandry.*

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CHARLES H. BATCHELDER, B.S., *Assistant in Zoölogy.*
MARION E. TEMPLETON, A.B., *Assistant in Botany.*
HARRIET H. STANLEY, *Assistant in English.*

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CLARENCE R. CLEVELAND, A.B., *Assistant in Economic Entomology.*
FRANK H. WILSON, B.S., *Florist.*

NEW HAMPSHIRE AGRICULTURAL EXPERIMENT STATION.

THE STATION STAFF.

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FRED RASMUSSEN, B.S.A., *Dairyman.*
B. E. CURRY, A.B., *Chemist.*
W. C. O'KANE, A.M., *Entomologist.*
J. H. GOURLEY, B.S., *Horticulturist.*
J. H. FOSTER, B.S., M.F., *Forester.*
O. R. BUTLER, Ph.D., *Botanist.*
E. G. RITZMAN, B.S., *Animal Husbandman.*
W. H. WOLFF, M.S., *Assistant Horticulturist.*
T. O. SMITH, A.B., *Assistant Chemist.*
CAROLINE A. BLACK, Ph.D., *Assistant Botanist.*
J. B. SCHERRER, B.S., *Assistant in Vegetable Gardening.*
FORD S. PRINCE, B.S., *Assistant Agronomist.*
C. R. CLEVELAND, B.S., *Assistant Entomologist.*
F. H. WILSON, B.S., *Florist.*

Assistants to the Staff.

HARRIET H. STANLEY, *Librarian.*
O. V. HENDERSON, *Purchasing Agent.*
BEATRICE M. RICHMOND, *Bookkeeper.*
LAURA B. BICKFORD, *Stenographer.*
ELIZABETH E. MEHAFFEY, *Assistant Librarian and Mailing Clerk.*
BEATRICE E. CARLISLE, *Stenographer.*

THE EXTENSION SERVICE.

GENERAL EXTENSION STAFF.

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J. C. KENDALL, B.S., *Director of Extension Work.*
J. B. ABBOTT, M.S., *State Leader, County Agent Work.*
W. P. DAVIS, *In Charge Dairy Cow Test Association Work.*
C. L. LONG, M.S., *In Charge Orchard Demonstrations.*
R. E. BATCHELDER, B.S., *In Charge Movable Schools.*
SARAH L. BATES, *In Charge Extension Work in Home Economics.*
L. A. CARLISLE, B.S., *In Charge Boys' Club Work.*
MARY L. SANBORN, *In Charge Girls' Club Work.*
E. M. STRAIGHT, B.S.A., *In Charge Vegetable Garden Demonstrations.*
B. B. RICHARDSON, B.S.A., *In Charge Orchard Demonstrations in Hillsboro County.*
A. W. BENNER, *In Charge Dairy Demonstrations in Grafton County.*
R. D. LONG, B.S., *In Charge Soil Fertility and Crop Rotation Demonstrations, Rockingham County.*

County Agents.

H. N. WELLS, *County Agent, Sullivan County.*
F. N. DARLING, B.S., *County Agent, Cheshire County.*
———————— *Coos County.*
———————— *Belknap County.*
———————— *Merrimack County.*

Assistant to the Staff.

JANET E. McDONALD, *Stenographer.*

HISTORICAL SKETCH.

The New Hampshire College of Agriculture and the Mechanic Arts was created by an act of the New Hampshire legislature in 1866 and was established at Hanover as a state institution, in connection with Dartmouth College. In its foundation the state legislature had accepted the conditions of an act of the federal congress of July 2, 1862, entitled "An act donating public lands to the several states and territories which may provide colleges for the benefit of agriculture and the mechanic arts." The state had accepted the land grant three years earlier, July 9, 1863.

In 1893 the college was moved from Hanover to Durham. This action followed the death of Benjamin Thompson of Durham, a farmer, who died January 30, 1890, and left his entire estate, with a few minor reservations, to the college. The legislature accepted this bequest March 5, 1891, and appropriated the necessary money for the first buildings.

Mr. Thompson wrote in his will, "My object being mainly to promote the improvement of agriculture, though willing that the college to be established should also provide for the mechanic arts, it is my will that the institution to be established by the state . . . shall be called and designated . . . The New Hampshire College of Agriculture and the Mechanic Arts, if that shall be the wish of the state; and that in addition to the instruction to be given therein, as provided by my said will, there shall be taught only such other arts or sciences as may be necessary to enable said state to fully avail itself of said donation of lands by the government in good faith, which two branches of instruction shall be the leading objects of said institution or college."

A few days before the state accepted this bequest of Mr. Thompson the legislature further provided for the college by accepting the provisions of an act of congress known as the

Morrill Bill. This legislation made available federal appropriations "for instruction in agriculture, the mechanic arts, the English language, and the various branches of mathematical, physical, natural and economic science, with special reference to their applications in the industries of life, and to the facilities for such instruction."

Although the college was able to make use of the Thompson land as early as 1893, it was not until 1910 that the income from this endowment of almost $800,000 became available. At present the college has an annual income from the Thompson funds of nearly $32,000, the moneys which are available as the result of the acts of congress referred to, and the biennial appropriations of the state legislature.

The college administration is in charge of a board of thirteen trustees. The governor of the state and the president of the college are *ex-officio* members; the college alumni elect two, and the others are appointed by the governor with the advice and consent of the council.

A branch of the college, known as the New Hampshire Agricultural Experiment Station, was established by the state, August 4, 1887, under an act of congress of March of that year. Its purpose is to acquire agricultural knowledge and to bring its information to the people of the state. The station is actively engaged in this work not only in Durham but throughout the commonwealth. Members of the agricultural faculty of the college serve on the station staff. There is also an extension department with a staff of seventeen who are devoting their entire time to demonstration work on the farm, in the home and to agricultural clubs.

When the college came to Durham it had but twenty-seven students and a faculty of but thirteen members. At present its students number five hundred and eighteen and its faculty fifty. Its growth, at first slow, has been constant always, and in the last five years the college has doubled the number of its students and greatly increased its equipment.

GENERAL INFORMATION.

Situation.—Durham, the home of the college, is on the Portland division of the Boston and Maine railroad, sixty-two miles from Boston and five miles from Dover.

Courses.—The college is a part of the public school system of the state, continuing the work of the high school, and its courses are open to both men and women. In accord with the origin and function of the college, its courses are essentially practical, leading directly to the student's preparation for a successful livelihood.

I. Agriculture.

a. Four-Year Courses.
  1. Animal Husbandry and Dairying.
  2. Forestry.
  3. Horticulture.
  4. General Agriculture and Agricultural Teaching.

b. Two-Year Course in Agriculture.
c. Five-Week Course in Dairying.
d. Four One-Week Winter Courses in Agronomy, Animal Husbandry and Horticulture.
e. Farmers' One-Week Course.

II. Arts and Science.

a. General Arts and Science.
b. Home Economics.
c. Mechanic Arts for Teachers.

III. Engineering.

a. Chemical Engineering.
b. Electrical Engineering.
c. Mechanical Engineering.
d. Two-Year Course in Industrial Mechanics.

Tuition and Fees.—Tuition is $60 a year; fees, which include all charges commonly considered extras, except those for breakage and damage to college property, are $20

a year. They are payable in advance in two equal instalments, one on the first day of each semester. By vote of the trustees, all members of the senior class are assessed a graduation fee of $5.00.

Scholarships.—Scholarships are awarded each semester at the discretion of the faculty to resident students of New Hampshire. They may be forfeited at any time for misconduct and will not be awarded, except by special permission of the president, to students in the four-year courses who have failed to secure an average grade of sixty or over in the previous semester. They are given for the purpose of aiding deserving students and will be withdrawn from those who use intoxicating liquor or tobacco.

Conant Scholarships.—There are twenty-seven Conant scholarships, each paying tuition, $60; fees, $20; cash, $20,—total, $100. These are assigned under the following conditions:

They are to be given to young men taking agricultural courses.

Each town in Cheshire County is entitled to one scholarship, and Jaffrey is entitled to two.

They will be reserved for their respective towns until August 1 of each year. Those not taken by students from Cheshire County, and those in excess of the number of towns, will then be assigned to agricultural students from other parts of the state, and may be divided at the discretion of the president.

Senatorial Scholarships.—There are twenty-four senatorial scholarships, one for each senatorial district. Each scholarship is to pay tuition of $60. Senatorial scholarships not filled may be assigned to students from other localities at the discretion of the faculty; they are open to students in all courses.

Grange Scholarships.—Each subordinate and Pomona grange in New Hampshire has the privilege of appointing one student to a free scholarship in any of the four-year

or two-year courses in the college. Each scholarship is to pay the tuition of $60. The method of appointment is entirely at the option of the grange; it may be by election, competitive examination, or otherwise. Holders of these scholarships need not be members of the grange, but must be resident within the state.

Valentine Smith Scholarships.—Through the generosity of the late Mr. Hamilton Smith of Durham, the sum of $10,000 has been given to the college to establish the Valentine Smith scholarships.

"The income thus accruing to the college shall be given to the graduate of an approved high school or academy who shall, upon examination, be judged to have the most thorough preparation for admission to the college; *provided*,

"That if the student receiving this scholarship shall at any time prove unworthy, in the judgment of the faculty, by reason of defective scholarship or character, he shall forfeit his claim to the student most deserving; and

"That if the student receiving this scholarship shall cease to be a member of the college, the income from this fund, for the unexpired term, shall be awarded to the student most deserving in character and scholarship."

By vote of the faculty, these scholarships will be forfeited by failure to obtain an average grade of 75 per cent. for any semester. These scholarships yield $400 annually or one hundred dollars to each holder. Competitive examinations for this scholarship will be held June 22, 23, 24, 25, 1915, in Durham, Keene, Laconia, Lancaster, West Lebanon, and Manchester. Examinations are not restricted to citizens of New Hampshire. For examination schedule see page 33.

Prizes.—*Bailey Prize.*—Dr. C. H. Bailey of Gardner, Mass., and E. A. Bailey, B.S., of Keene, N. H., offer a prize of ten dollars for proficiency in chemistry.

Erskine Mason Memorial Prize.—Mrs. Erskine Mason of Stamford, Conn., has invested one hundred dollars as a memorial to her son, a member of the class of 1893, the in-

come of which is to be given, for the present, to that member of the senior class who has made the greatest improvement during his course.

Chase-Davis Memorial Medals.—In the spring of 1909 the Glee Club voted to present a gold and a silver medal yearly to the college in memory of Carl Chase, '09, of Webster, an enthusiastic member of the New Hampshire football team and the Glee Club, and of John Worthen Davis, '11, of Concord, who were drowned in Great Bay, December 7, 1908.

According to the terms of this gift, the gold medal is to be awarded to the senior who has won an "N. H." and stands highest in his studies, and the silver medal is to be awarded to the senior who has won an "N. H." and stands second in his studies. These medals are for excellence in athletic competition primarily, and the number of times a man wins an "N. H." during his college career shall be of importance in making the award.

Individual Drill Prizes.—First—A gold medal given by the college. *Second*—A silver medal given by the college. *Third*—A bronze medal given by the college.

Junior Officer's Prize.—A saber, with belt complete, given to the junior cadet officer who excels in executing certain required movements or evolutions with a company.

College Aid to Students.—Students obtain considerable financial aid by janitorships, by table work at boarding clubs and by work on the farm and in the greenhouse. They also find employment with the power and service department of the college and with the experiment station.

Students may purchase at cost all books, drawing instruments, materials, etc., at the college book-store in Thompson Hall.

Estimate of Freshman Expenses.—

Tuition	Free	$60.00
Text-books	$12.00 to	17.00
Military uniform for new students	18.00 to	18.00
Drawing instruments and materials	6.00 to	18.00
Fees	20.00 to	23.00
Room rent, including heat and light	40.00 to	90.00
Board, $4.00 to $4.50 per week, for thirty-six weeks	144.00 to	162.00
Various advisable college functions	0.00 to	12.00
Total	$240.00	$400.00

Expenses of two-year agricultural students are about $15 less than above schedule.

This total does not include incidentals (such as traveling expenses, laundry, etc.).

Room rent is estimated on the supposition that two students occupy the same room or suite of rooms.

It is expected that a dormitory housing one hundred men will be available by the opening of the first semester, 1915–16. Rooms may be obtained either furnished or unfurnished, in buildings under private control, and are for the most part provided with heating apparatus, electric lights and baths.

Expenses For Women Students.—Women students, unless living at home, are required to room in the dormitories provided by the college, Smith Hall and Ballard Hall.

Smith Hall contains twelve double rooms and six single rooms. In Ballard Hall there are eleven two-roomed suites each intended for three girls; two double and three single rooms. All women students board at Smith Hall. Each dormitory is equipped with a laundry for the use of the girls. The rooms are supplied with all necessary furniture. Students furnish their own bedding, rugs, towels, etc.

Table board is about $4 per week and prices for rooms range from $1.25 to $2.00 per week for thirty-six weeks. The single rooms are the more expensive. Rooms are

assigned to old students in the order of their seniority and to new students according to the date of their application. Applications for rooms should be made to the Registrar.

Other expenses are the same as for men students, except for military uniform.

Registration.—Undergraduate students are required to register before 4 p. m. on the first day of each semester.

Every former student registered after the first day of any semester shall be charged for such registration a fine of one dollar for the first day and fifty cents additional for each succeeding day, to be remitted only by the president upon presentation of a substantial excuse for the delay. The dean of the college has general supervision of registration, attendance, election of studies and removal of entrance conditions.

Warnings and Reports of Standing.—Warnings of unsatisfactory work are sent to parents and guardians near the middle of each semester.

Reports of standing are sent to parents and guardians at the close of each semester.

Attendance at Convocation and Military Drill.—Attendance at convocation is required of all students, and attendance at military drill is required of all male students, unless members of the senior class or unless excused on account of physical disability. Certificates of disability must be obtained of the physician designated by the college, and must be renewed annually.

Military Department.—This department is in charge of an officer of the United States regular army, detailed by the war department, as professor of military science and tactics. Military instruction, which is required by law, is both theoretical and practical, the former having special reference to the duties of the line.

The organization is a battalion of five companies with a band, officered by cadets selected for character, soldierly

bearing and efficiency. The federal government has furnished U. S. magazine rifles, model 1898, and equipment. Attention is paid to rifle practice, the government supplying ample ammunition and target materials, and the college a good range within four minutes' walk of the college buildings, with firing points at 200 and 300 yards. The rolling country in the vicinity of the college furnishes the best opportunities for extended order drill and field exercises, the athletic field for close order drills, and the gymnasium gives ample room for indoor work.

The cadets wear when on duty, and may at other times, an olive drab cloth uniform as prescribed by standing orders in the War Department. The cost of a uniform for the new student is $17.75 not including shoes, and its use may make possible a saving in civilian clothing.

Service in this department is optional for members of the senior class; all other students, excepting those excused by competent authority, are required to attend both drills and recitations. Seniors who elect drill and are appointed cadet officers have their college fees refunded at the end of the semester if their work has been satisfactory. Seniors who elect drill and are not appointed cadet officers are not required to be armed or to drill in the ranks, but will attend all drills and perform such duties as may be required of them.

Upon the graduation of each class the names of those students who have shown special aptitude for military service are reported to the adjutant-general of the army and to the adjutant-general of the state, and they receive a special certificate for military proficiency.

BUILDINGS AND EQUIPMENT.

BUILDINGS.

The college is housed in eleven large buildings scattered over a handsome campus. Of these buildings, six are devoted to offices, recitation rooms or laboratories; one is the large armory and gymnasium; two are dormitories for women; one the library, containing the books of the college and the town of Durham, and one the home of the experiment station. Besides these there are the college barn, several smaller barns, an insectary, a poultry laboratory, poultry houses, and a range of greenhouses.

Thompson Hall is the main administration building and from its eminence commands a view of the entire campus. It contains besides recitation rooms and the large assembly hall where chapel exercises are held, the offices of the president, the dean, the registrar, the business secretary, the bookstore, and the headquarters of the departments of modern languages, mathematics, zoölogy, economic entomology, and home economics.

DeMerritt Hall, the new engineering building, was completed last year at a cost of $80,000. It is the most prominent of the engineering group and houses the departments of mechanical engineering, electrical engineering, physics, and drawing. Besides the necessary lecture and recitation rooms, storage rooms, and laboratories, there is in the basement a room reserved for the use of a mechanician and on the first floor a room for the use of students for study, computation, reading and reference work.

The department of drawing occupies the entire top story of the middle section with two main rooms and a blue print room. On the second floor it occupies an office, recitation room and one drawing room.

The department of mechanical engineering shares the

second floor with the drawing and physics departments, occupying there its offices, lecture and recitation room and a designing room. It also occupies a large part of the basement as a laboratory which is to be fitted with machinery for the study of the properties of steam and water in their technical application.

The department of electrical engineering has offices, lecture and recitation rooms, and a designing room on the first floor, together with a spacious suite of storage and experimental rooms in the basement. In the rear laboratory section there is a large main switchboard and a laboratory for dynamo electric machinery.

The department of physics occupies the whole of the west wing of the building. On the second floor is a lecture room seating about one hundred and a room for storage of lecture apparatus; on the first floor is a large elementary laboratory, together with a suite of storage, office and recitation rooms in the middle section; and in the basement are an intermediate laboratory, small rooms for special work, and others for storage battery and switchboard purposes.

Conant Hall is devoted exclusively to the department of chemistry. The second floor, containing lecture rooms and three laboratories, remains substantially as it has been for a number of years. The first floor has been recently fitted up with modern chemistry desks and other equipment to supply much needed additional laboratory facilities for chemical students. The building is thus well equipped for carrying on the chemical courses of the college, including those connected with agriculture, home economics, and chemical engineering.

Morrill Hall is the headquarters of the agricultural department of the college and also has the office of the director of the experiment station and the experiment station library. In this building are the laboratories and lecture rooms of the departments of agronomy, animal husbandry, horticulture, poultry husbandry, and forestry. The building also contains a collection of farm implements, a dark room, and a cattle judging room.

Nesmith Hall is occupied by the departments of chemistry and botany of the experiment station and contains the laboratories and lecture rooms of the department of botany of the college.

The Shop Building contains a wood shop, a machine shop, a forge shop, a foundry, the boiler house, and a general repair shop connected with the curator's department.

The Armory contains the lecture rooms and offices of the military department, the rooms of the College Club and a large drill hall and gymnasium.

The Dairy Building is arranged and equipped in the most up-to-date and sanitary manner. It contains a commercial creamery, with sanitary milk room, separator room, churning room, and cold storage room; laboratories for instruction in milk testing, milk inspection, farm butter and cheese-making, and bacteriology; a reading and exhibition room; class room, and offices.

Smith Hall and Ballard Hall are the two dormitories for women, each under the supervision of a competent matron. Smith Hall was made possible by the generosity of Mrs. Shirley Onderdonk, of Durham, who gave $16,000 as a memorial to her mother, Mrs. Alice Hamilton Smith. The remainder of the cost, $10,000, was provided by the state. The building has rooms for thirty-two girls, dining accommodations for seventy-five, and a large reception room which provides a social centre for the occupants.

Ballard Hall is a privately owned dormitory building which has been leased by the college for a four-year period, with the privilege of buying at a stated price at any time during that period. It has been remodeled, entirely refitted, and furnishes accommodations for forty-five girls. There is a reception room and a large music room for social use.

In accordance with an act of consolidation between the libraries of Durham and the college, the books of the Durham public library and the college are all shelved in one building, forming the Hamilton Smith Public Library. This consolidation makes an especially good collection, the scientific books of the college supplementing well the more popular

books of the town library. The consolidated libraries number about 34,000 volumes and the reading room is supplied with 100 periodicals. The departments of psychology and sociology, of history and political science, and of economics are located in the library building.

Aside from the main library, each department has its working library of the more technical books and journals.

EQUIPMENT.

Agronomy.—For the teaching of farm equipment and machinery, this department is provided with drainage levels for laying out drains, plane tables for making farm maps and a dynamometer and several other pieces of apparatus for studying draft problems. For farm crops work it has a very complete collection of dried specimens of the different forage crops, and the more important varieties of corn, wheat and oats. Seed testing apparatus, grass charts and other illustrative material form a part of the equipment.

A new combined lantern and reflectoscope with a moving picture attachment, together with a large number of lantern slides, has recently been installed in the lecture room.

The soil physics laboratory is equipped with soil bins, a new compacting machine, chemical and torsion balances and various kinds of physical apparatus for the study of soils, including that for the determination of specific gravity and for the making of mechanical analyses.

The agricultural museum contains the old original "Daniel Webster plow" and other primitive models. It also contains many of the latest types of farm machinery, including plows, cultivators, harrows, mowers, planters, corn and grain binders, gasolene engines, a thresher, manure spreader, etc., also different kinds of cattle ties, and various makes of woven wire fences.

The college farm, with its 380 acres of land, has a variety of soils suited for the growth of many farm crops. Land on

nearby farms is rented for the growing of corn and potatoes so that good opportunities are afforded for practical work and demonstration in the production of field crops.

Animal Husbandry.—For the various courses in animal husbandry an extensive use is made of the live stock of the college farm. The dairy herd consists of representative animals of the following breeds: Ayrshires, Guernseys, Jerseys and Holsteins. The college owns seven horses representing the draft type, and in order to become acquainted with the carriage and roadster types, the students are taken to various stock farms where these types may be inspected and judged. For the study of the different breeds of sheep, the experiment station flocks of pure-bred Southdowns, Shropshires, and Rambouillet are used.

A special appropriation by the legislature two years ago made possible a poultry department. A poultry plant is being built which at present consists of a number of colony houses, a large farm poultry house and a laboratory building containing an incubator cellar, killing and dressing room and work room. The following breeds of birds are represented here: Barred Plymouth Rocks, Rhode Island Reds, White Leghorns and Light Brahmas. Students are given practical instruction in judging the various breeds, management of flocks, handling of incubators and construction of poultry houses.

In the agricultural building a large room is fitted up for the judging of live stock, and score cards with a scale of points for each kind of animal are used.

The classroom is provided with a stereopticon lantern and a large collection of lantern slides is used to show the leading individuals of the different breeds of live stock. The herd books of the most prominent breeds are used for the purpose of familiarizing the student with methods of tracing pedigrees and the practices of breeders' associations.

Botany.—The department of botany has the usual laboratory equipment to meet the needs of the courses in general botany, plant physiology and bacteriology. In the advanced courses, owing to the connection of the department with the experiment station, students will find both the laboratory and greenhouse equipment ample for critical studies on plant diseases and plant nutrition.

Chemistry.—The several chemical laboratories are fairly well equipped. Each is supplied with most of the forms of apparatus required for its particular work. Besides all necessary glass and porcelain ware, this includes water baths, drying ovens, combustion, muffle and assay furnaces, platinum dishes and crucibles, polariscope, spectroscope, balances, lantern and other lecture appliances.

Dairying.—The dairy department, with its new dairy building, offers excellent opportunities for instruction in technical and practical dairy work. The college creamery is well equipped with up-to-date machinery, each machine being run by a separate electric motor.

In addition to the product of the college herd, milk and cream are received from over forty farms in Durham and vicinity. By this arrangement sufficient material is furnished for practical work. The farm dairy is equipped with the leading makes of hand separator and hand and small power churns suitable for private dairies. The milk testing and milk inspection laboratory is equipped with Babcock testers, sediment testers, acidimeters and other apparatus necessary for inspection of milk and cream for fat and other qualities.

Drawing.—For free-hand model drawing and for mathematical drawing there is a good supply of geometric models; and for free-hand industrial drawing the nucleus of a good collection exists, consisting of plaster casts of historic ornament, details of human form and antique sculpture, as well as vases and common objects. There is an excellent

collection of working models and machines for machine drawing, and various machines in other departments are available for this work.

Electrical Engineering.—The laboratory for electrical engineering occupies the ground floor of the south end of the new engineering building. It has a total area of about 4,500 square feet. There is one room 104 by 36 feet for dynamo electric machinery. In this main dynamo room there is a large new distributing switchboard, on which are mounted instruments, switches, circuit breakers, ground detectors, synchronizers and plugging devices so arranged that it is possible to connect the various rooms and convey thereto direct current and single, two-phase and three-phase alternating current of different voltages and frequencies.

In addition to this main dynamo room there is a room used for photometry, one for storage battery and one for high potential experiments. The laboratory also includes an instrument room, a mechanician's room and a dark room.

The general equipment of the laboratory includes various dynamos and motors for both direct and alternating currents, several transformers, the necessary measuring instruments and storage batteries, adapted to the needs of students taking this course.

In addition to the regular laboratory equipment, there is available for testing purposes a fully equipped sub-station having a capacity of 75,000 watts supplied by the Rockingham County Light and Power Company, of Portsmouth, N. H. A part of this equipment consists of an automatic induction feeder regulator, including contact making voltmeter and reversing switch.

Farm Department.—An institution like New Hampshire College is not complete without a well-equipped, well-organized and properly managed farm. The farm serves as a laboratory for much of the agricultural instruction, where approved farm methods in practice may be seen and where the students may gain experience by actually performing the work with their own hands.

The New Hampshire College farm comprises about 385 acres, of which about 100 are in forest and woodland; about 45 are occupied by the campus and athletic field; about 95 are tillage land; and about 145 are pasture land. Twenty-four acres of the pasture land are occupied by the animal husbandry department of the station and about 16 acres by the college reservoir. Twenty-two acres of the tillage land are used by the horticulture, agronomy and animal husbandry departments of the station.

Two farms, one comprising about 40 acres of tillage land and 160 acres of pasture, the other about 30 acres of tillage and 40 acres of pasture are rented by the farm department.

The farm buildings consist of a large storage barn, two 125-ton silos, a well-appointed, sanitary dairy stable ell which will accommodate 38 cows, and a basement under the main barn for housing young stock and dry cows. A building 60 by 18, with individual yards, has been erected for caring for the herd bulls. A horse barn 36 by 67 with basement and hay storage loft is occupied by the farm and horticulture departments.

Forestry.—The demand for instruction in forestry at the college has been increasing from year to year and the legislature of 1911 provided for a separate department of forestry. It is now possible to educate and, in a measure, train agricultural students in scientific forestry. The course is intended to provide not only a special training in forestry, but a broad general training in other lines of agriculture closely related to it. For those who desire to make forestry their life work, every encouragement and assistance will be given. Additional work at some graduate school of forestry is now almost a necessity, owing to the large number of men entering the profession today.

Durham is well situated with reference to the study of woodlot forestry. All types of native second-growth forests are found nearby and the college owns a tract of sixty acres of old-growth timber where exceptional opportunities are given for the study of mature forests. There are other

areas where practice will be given in establishing plantations of forest trees by various methods. A nursery for the growing of seedling forest trees has been started.

All the necessary instruments for making forest maps and measurements, together with collections of wood specimens, lantern slides and photographs, are available in connection with this work.

Home Economics.—The home economics department is located in two large rooms in Thompson Hall. The food laboratory, is fitted with work desks, storage cupboards and apparatus for cooking. The desks are built in cabinet form to hold the necessary utensils and materials for each student. The tops are of Alberene stone. This provides a sanitary working table and at the same time prevents accidents from fire. Each table is fitted with both gas and electric stoves and ovens.

The cooking utensils are of the materials best suited to the use of each, enameled steel, aluminum, glass and porcelain being used. Standard measuring cups and spoons, spring and balanced scales are provided for work in general cookery. For the advanced classes in nutrition and dietetics Harvard trip scales, Dr. Hart's food scales, standard double-scale thermometers, lactometers and graduated glass cylinders are used.

The sinks are of enameled steel and of the most sanitary models.

A storage cabinet, provided with bins for supplies and cupboard space for large utensils, is covered with a nickeloid top and serves for group work and for setting up apparatus of the labor-saving type.

One side of the room is furnished with three small, portable tables. These tables each contain a drawer for storing paper, charts and reference material. They serve the purpose of writing tables during the lecture hour and for calculations, to which much time must be given in dietetics, and also afford space for the proper display of dietaries when prepared for critical study by the class. The size of the small

tables, four by two and a half feet, makes it possible to arrange them for the several purposes needed in the study of foods from either the qualitative or quantitative point of view. The three tables side by side provide a large table for the serving of regular meals to a group of six or eight; two tables end to end permit the grouping of several days' dietaries for individuals for comparative study; one table alone can be used for setting out a family dietary or for weighing and comparing 100-calorie portions of foods and special dietaries for pathological cases. Enough linen, silver, glass and china are provided for serving simple meals to class groups or invited guests.

The sewing equipment consisting of sewing machines, cabinets, yard sticks, chairs and tables occupies a separate room which is used also for lectures and recitations in home economics. Ample blackboard space, charts and materials for drafting patterns aid the student in the constructive work in line and form. The reference library of books, bulletins, and journals is deposited partly in this room and partly in the main library.

Mechanical Engineering.—The mechanical laboratory equipment includes a 40-horse power steam engine; a steam boiler especially equipped for testing; a large duplex pump; nozzles for measurements during hydraulic tests; a 10-inch standpipe, a 6,000-gallon measuring tank and other apparatus for an extensive series of hydraulic experiments; a 50,000-pound Olsen machine with the necessary tools and measuring instruments for tension, compression and transverse tests; a 12-horsepower gas engine; a Westinghouse air-brake pump with locomotive and tender attachments; steam and gas engine indicators; a surface condenser; a Bristol pyrometer; a cement testing machine with the necessary sieves and other apparatus for testing and the usual supply of scales, gauges, thermometers and small apparatus.

Physics.—Besides the necessary furniture the department is supplied with the usual small tools, calipers, scales, balances, weights, hydrometers, calorimeters, thermome-

ters, etc., and with other apparatus for the performance in the laboratory of experiments in mechanics, sound, light, magnetism and electricity.

The lecture room has a small but growing collection of apparatus for the illustration, both experimentally and with the projection lantern, of the laws of matter and energy in their various relations, and of the history of physics.

Instruction is carried on by means of lectures, with mimeographed outlines furnished to students and constantly kept up to the development of the courses; recitations and discussions based on standard text-books, and experimental work in the laboratory. Mimeographed outlines are furnished for the laboratory experiments, with concise directions and references, and reports are written by the students on the results of their experiments, for examination and criticism by the teacher.

The physics department occupies all of the west wing of the new engineering building. In the basement there are a large laboratory room for intermediate work in courses yet to be developed, two small rooms for individual work, a switchboard room, a room for storage battery and for chemical work, and a storage room. On the first floor are the general elementary laboratory, partly divided off into small rooms for work in light or for balances, a room for apparatus storage, the office and a recitation room. On the second floor are the lecture room and a room for the storage of lecture apparatus. The lecture room will seat about one hundred.

Shopwork.—The wood shop is supplied with benches and the necessary tools to accommodate twenty students at one time. Other equipment consists of a universal pattern maker's saw, board-planer, buzz-planer, band saw, speed-lathes and a large pattern maker's lathe with boring attachment.

The equipment of the machine shop consists of engine lathes, a speed-lathe, a vertical drill, a planer, a large universal milling machine, a plain milling machine, a shaper, a

power hack saw, a tool grinder, twelve benches with vises and bench lathes; and a large number of small tools, including micrometer, calipers and gauges necessary for accurate work.

In the forge shop are seventeen Sturtevant down-draft forges with anvils and necessary tools. The blast to the forges is furnished by a No. 4 blower, and the smoke carried away by a 60-inch exhauster. These are driven by a small steam-engine.

All the shops are operated by 550–volt three-phase induction motors, suitably connected to line shafting and driving the tools by the "group plan."

Zoölogy.—This institution is favorably situated geographically for the study of zoölogy. Within a few minutes' walk of the laboratory is the Oyster river where it meets the tide water from Great Bay. This furnishes a gradation of salt, brackish and fresh water with an abundance of their characteristic fauna. Great Bay, the Piscataqua river and the open ocean are within easy access, and have their own peculiar, characteristic forms. On the other hand there are numerous bodies of fresh water, with typical fresh water forms.

The department of zoölogy is prepared to offer courses along the following lines: (A) systematic zoölogy; (B) physiology and sanitation; (C) philosophical zoölogy; (D) anatomical zoölogy.

The equipment for the work in systematic zoölogy consists of a well-lighted laboratory, provided with tables, charts, dissecting and compound microscopes. All of the latest books and periodicals on systematic zoölogy are at the student's disposal. The lecture room is fitted with a new reflectoscope capable of projecting opaque objects, text-book figures or lantern slides. The room has a seating capacity of eighty, and is provided with armed chairs which enable the students to readily take down notes and drawing. There is a fairly complete collection of local invertebrates, and a very good collection of the birds of New Hampshire.

The work in systematic entomology is greatly aided by a large and complete collection of insects which is the property of the experiment station.

The proximity to both salt and fresh water renders the work in advanced systematic zoölogy unusually attractive. In addition to the regular collecting equipment, nets, aquaria, etc., advanced students also have the use of row-boats and a gasolene launch.

In the work in physiology, hygiene and sanitation the department is provided with an unusually fine collection of injected preparations of the human body, and with numerous charts. The same laboratory and equipment is used in this work as noted above.

For work in evolution and experimental zoölogy the department has a very complete library. Studies in ecology in Great Bay and vicinity are encouraged, for which purpose the students have the use of a camera equipment. In addition to the study of evolution under natural conditions the department also furnishes aquaria for laboratory study and experiments.

The work in anatomical zoölogy is greatly facilitated by an abundance of fresh material which may be collected as needed. For the study of human and comparative anatomy a full set of skeletons and preserved material is provided. Students interested in histology have access to a private collection of some two thousand microscope slides.

Museum.—The museum had for a nucleus the collection made during the state geological survey. To this additions have been made from various sources. Specimens are being collected to illustrate the zoölogy of New Hampshire, and New Hampshire collectors and naturalists are invited to make the museum the permanent depository of their collections.

ADMISSION TO FOUR-YEAR COURSES.

METHODS OF ADMISSION.

Admission to New Hampshire College may be obtained by examination, by certificate, or by a combination of the two methods. Every candidate must present a satisfactory testimonial of good character.

Graduates of high schools and academies in New Hampshire approved by the State Superintendent of Education, and of other schools approved by the college, may be admitted by certificates. Principals should certify only such students as have by their preparation justified the belief that they are qualified for admission to college. Approval of a school will be withdrawn whenever it appears that the work of the school does not reach the standard required by the college. The candidate will be examined on all requirements not covered by the certificate.

Divided certificates from two or more schools will be accepted when the preparatory work has been done in more than one institution.

The certificate must be made out on a blank furnished by the college and should be mailed to the dean at the close of the school year. Certificate forms will be furnished upon application to the dean.

Candidates for advanced standing are admitted on the basis of the work completed at the institutions from which they come.

UNIT REQUIREMENTS.

Candidates for admission to the freshman class must offer a total of fifteen units.

Each unit represents one study of four or five recitations a week for one year. It is assumed that two hours of manual training or laboratory work are equivalent to one hour of class room work.

		Agricultural Division.	Arts and Science Division.	Engineering Division.
Required Units.				
Group A	English,	3	3	3
Group B	Mathematics,	2	2	3
Group C	Social Science and History,	1	1	1
Group D	Natural Science,	1	1	1
		7	7	8

Elective Units.

Group E Foreign Languages, ancient or modern.

Group F Vocational Subjects: Agriculture, commercial subjects, domestic arts, mechanic arts (see page —). Not more than 4 units accepted.

Other elective units may be chosen from Groups A, B, C, and D.

A candidate for admission to the Arts and Science Division who offers two units in a foreign language may substitute for the two units required in mathematics two units in either social science or natural science or one in each.

REQUIREMENTS IN DETAIL.

Entrance by Certificate.—Any subjects mentioned in the groups below which are properly certified will be accepted for entrance by the college if taught in an approved school. Other subjects may be approved and accepted in special cases.

Entrance by Examination.—The college does not give written examinations in certain vocational subjects involving mainly practical work but will require certification in such work.

Examinations will be given in all other subjects mentioned in the groups, in June and September at the college and in June at the following places also: Keene, Laconia, Lancaster, Manchester, and West Lebanon. Competitors for the Valentine Smith scholarship may take the examinations wherever they are given in June. Candidates for

engineering courses who desire to compete, are required to take examinations in only two units of mathematics. For details of this scholarship see page 13.

Requests for examinations should be forwarded at least one week before the beginning of the examination period to the dean and must state the place at which the students will present themselves, their names, addresses, and the examinations desired by each. Printed forms for such requests may be obtained from the registrar.

SCHEDULE OF EXAMINATIONS.

Tuesday, June 22, 1915.
Tuesday, September 7, 1915.

Mediaeval and Modern History	English
Elementary Algebra	Plane Geometry

Wednesday, June 23, 1915.
Wednesday, September 8, 1915.

English History	Elementary Latin
Physics	Advanced Latin

Thursday, June 24, 1915.
Thursday, September 9, 1915.

Chemistry	French
American History	Advanced Algebra

Friday, June 25, 1915.
Friday, September 10, 1915.

Ancient History	German
Solid Geometry	Botany

Examinations not scheduled will be arranged.

ENTRANCE REQUIREMENTS IN THE SEVERAL GROUPS.

GROUP A. ENGLISH.

Preparation in English has two main objects: (1) command of correct and clear English, spoken and written; (2) ability to read with accuracy, intelligence and appreciation.

The first object requires instruction in grammar and

composition. A candidate will not be accepted in English whose work is notably deficient in point of spelling, punctuation, phraseology or division into paragraph. The second object is sought by means of two lists of books, headed respectively Reading and Study, from which may be framed a progressive course in literature covering four years.

Reading.—The aim of this course is to foster in the student the habit of intelligent reading, and to develop a taste for good literature, by giving him a first-hand knowledge of some of its best specimens. He should read the books carefully, but his attention should not be so fixed upon details that he fails to appreciate the main purpose and charm of what he reads.

Study.—This part of the requirement is intended as a natural and logical continuation of the student's earlier reading, with greater stress laid upon form and style, the exact meaning of words and phrases, and the understanding of allusions. For this close reading are provided a play, a group of poems, an oration and essay.

The first part of the examination will be upon the books prescribed for reading, and the form of the examination will usually be the writing of short paragraphs on several topics which the candidate may choose out of a considerable number. It may include also questions upon grammar and the simpler principles of rhetoric.

The second part of the examination will include composition and those books comprised in the list headed Study. The test in composition will consist of one or more essays, developing a theme through several paragraphs; the subjects will be drawn from the books prescribed for study, from the candidate's other studies, and from his personal knowledge and experiences quite apart from reading.

Requirements, 1915–1919.—(a). Reading. The following list of books is required for reading in 1915, 1916, 1917, 1918 and 1919.

With a view to large freedom of choice, the books are arranged in the following groups, from each of which at least two selections are to be made, except as otherwise provided under 1:

1. *Classics in Translation.* Same as in 1913–1914. For any selection from this group a selection from any other group may be substituted.

2. *Shakespeare.*—Midsummer Night's Dream; Merchant of Venice; As You Like It; Twelfth Night; The Tempest; Romeo and Juliet; King John; Richard II; Richard III; Henry V; Coriolanus; Julius Caesar*; Macbeth*; Hamlet*.

3. *Prose Fiction.*—Malory's Morte d'Arthur (about 100 pages); Bunyan's Pilgrim's Progress, Part I; Swift's Gulliver's Travels (Voyages to Lilliput and to Brobdingnag); DeFoe's Robinson Crusoe, Part I; Goldsmith's Vicar of Wakefield; Frances Burney's Evelina; Scott's Novels (any one); Jane Austen's Novels (any one); Maria Edgeworth's Castle Rackrent, or The Absentee; Dickens's Novels (any one); Thackeray's Novels (any one); George Eliot's Novels (any one); Mrs. Gaskell's Cranford; Kingsley's Westward Ho! or Hereward, the Wake; Reade's The Cloister and The Hearth; Blackmore's Lorna Doone; Hughes's Tom Brown's Schooldays; Stevenson's Treasure Island, or Kidnapped, or Master of Ballantrae; Cooper's Novels (any one); Poe's Selected Tales; Hawthorne's The House of Seven Gables; or Twice-Told Tales, or Mosses from an Old Manse; a collection of short stories by various standard writers.

4. *Essays, Biography, etc.*—Addison and Steele's The Sir Roger de Coverley Papers or Selections from the Tatler and Spectator (about 200 pages); Boswell's Selections from the Life of Johnson (about 200 pages); Franklin's Autobiography; Irving's Sketch Book (about 200 pages), or Life of Goldsmith; Southey's Life of Nelson; Lamb's Essays of Elia (about 100 pages); Lockhart's Life of Scott (about 200

* If not chosen for study under (*b*.)

pages); Thackeray's Lectures on Swift, Addison, and Steele in the English Humourists; Macaulay's Lord Clive, Warren Hastings, Milton, Addison, Goldsmith, Frederic the Great, Madame d'Arblay (any one); Trevelyan's Life of Macaulay (about 200 pages); Ruskin's Sesame and Lilies, or Selections (about 150 pages); Dana's Two Years before the Mast; Selections from Lincoln, including at least the two Inaugurals, the Speeches in Independence Hall and at Gettysburg, the Last Public Address, and the Letter to Horace Greeley, together with a brief memoir or estimate; Parkman's The Oregon Trail; Thoreau's Walden; Lowell's Selected Essays (about 150 pages); Holmes's The Autocrat of the Breakfast Table; Stevenson's An Inland Voyage, and Travels with a Donkey; Huxley's Autobiography, and selections from Lay Sermons, including the addresses on Improving Natural Knowledge, A Liberal Education, and A Piece of Chalk; a collection of Essays by Bacon, Lamb, DeQuincey, Hazlitt, Emerson, and later writers; a collection of letters by various standard writers.

5. *Poetry.*—Palgrave's Golden Treasury (First Series), Books II and III, with special attention to Dryden, Collins, Gray, Cowper, and Burns; Palgrave's Golden Treasury (First Series), Book IV, with special attention to Wordsworth, Keats, and Shelley (if not chosen for study under *b*); Goldsmith's The Traveler, and The Deserted Village; Pope's The Rape of the Lock; a collection of English and Scottish ballads, as, for example, some Robin Hood ballads, The Battle of Otterburn, King Estmere, Young Beichan, Bewick and Grahame, Sir Patrick Spens, and a selection from later ballads; Coleridge's The Ancient Mariner, Christabel and Kubla Khan; Byron's Childe Harold, Canto III or IV, and The Prisoner of Chillon; Scott's The Lady of the Lake, or Marmion; Macaulay's The Lays of Ancient Rome, The Battle of Naseby, The Armada, Ivry; Tennyson's The Princess, or Gareth and Lynette, Lancelot and Elaine, and The Passing of Arthur; Browning's Cavalier Tunes, The Lost Leader, How They Brought the Good News from Ghent to

Aix, Home Thoughts from Abroad, Home Thoughts from the Sea, Incident of the French Camp, Hervé Riel, Pheidippides, My Last Duchess, Up at a Villa—Down in the City, The Italian in England, The Patriot, The Pied Piper, "De Gustibus"—, Instans Tyrannus; Arnold's Sohrab and Rustum, and The Forsaken Merman; Selections from American Poetry, with special attention to Poe, Lowell, Longfellow, and Whittier.

(b) **Study.**—The books provided for study are arranged in four groups, from each of which one selection is to be made.

1. *Drama.*—Shakespeare's Julius Caesar, Macbeth, Hamlet.

2. *Poetry.*—Milton's L'Allegro, Il Penseroso, and either Comus or Lycidas; Tennyson's The Coming of Arthur, The Holy Grail, and The Passing of Arthur; the selections from Wordsworth, Keats and Shelley in Book IV of Palgrave's Golden Treasury (First Series).

3. *Oratory.*—Burke's Speech on Conciliation with America; Macaulay's Two Speeches on Copyright, and Lincoln's Speech at Cooper Union; Washington's Farewell Address, and Webster's First Bunker Hill Oration.

4. *Essays.*—Carlyle's Essay on Burns, with a selection from Burns's Poems; Macaulay's Life of Johnson; Emerson's Essay on Manners.

GROUP B. MATHEMATICS.

1. **Elementary Algebra.**—The four fundamental operations for rational algebraic expressions. Factoring, determination of highest common factor and least common multiple by factoring. Fractions, including complex fractions, and ratio and proportion. Linear and quadratic equations, both numerical and literal. Problems depending on linear and quadratic equations. Radicals, including the extraction of the square root of polynomials and of

numbers. Exponents, including the fractional and negative.

2. **Advanced Algebra.**—The formula for the *n*th term and the sum of the terms of arithmetical and geometrical progressions, with applications. The theory and use of logarithms, without involving the use of infinite series. The binomial theorem for positive integral exponents. Complex numbers, with graphical representation of sums and differences. Determinants limited to simple cases. The elements of the theory of equations.

3. **Plane Geometry.**—The usual theorems and constructions of good text-books, including the general properties of plane rectilineal figures; the circle and measurement of angles; similar polygons; areas; regular polygons, and the measurement of the circle. The solution of numerous original exercises including loci problems. Applications to the measurement of lines and plane surfaces.

4. **Review Mathematics.**—A general mathematics review during half of senior year is recommended, especially for students preparing for college engineering courses. A certificate covering the work of not more than one unit will be accepted for entrance. No examinations will be given.

5. **Solid Geometry.**—The usual theorems and constructions of good text-books, including the relations of lines and planes in space; the properties and measurement of prisms, pyramids, cylinders and cones; the sphere and the spherical triangle. The solution of numerous original exercises including loci problems. Applications to the measurement of surfaces and solids.

6. **Plane Trigonometry.**—The subject matter of plane trigonometry as presented in good text-books, including the solution of trigonometric equations of a simple character, the use of trigonometric equations of a simple character, the use of logarithms, the solution of right and oblique triangles, and practical applications.

GROUP C. SOCIAL SCIENCE AND HISTORY.

This group includes history, political economy, commercial law.

Although there are excellent text-books in history, adequate preparation cannot be obtained by text-book work alone. Some collateral work is necessary, whatever text-book is used, and with certain text-books a large amount is necessary. The details of the preparatory work in history are fully stated in A History Syllabus for Secondary Schools, by the New England History Teachers' Association. Boston, D. C. Heath & Co., 1904. Details are also stated in Standard Program for the Secondary Schools of New Hampshire, Department of Public Instruction, Concord, N. H.

1. **Ancient History.**—This may include the earliest nations and the period to 800 A. D., or it may be limited to Grecian History and Roman History to the fall of the Western Roman Empire.

2. **Mediaeval and Modern History.**

3. **English History.**

4. **American History and Civics.**—The work may conform to the course in American constitutional history described in the Standard Program or to the course in American history developed in nearly a hundred pages of the Syllabus. It is assumed that in any case a reasonable amount of time is to be given to the study of the Constitution of the United States.

5. **Political Economy.**—(1) The study of a standard text. (2) At least six topics investigated by outside reading by each pupil.

6. **Commercial Law.**—(1) Study of a standard text. (2) The study of a total of not less than thirty-six specific cases.

GROUP D. NATURAL SCIENCE.

A notebook, carefully kept and examined by the teacher, is an essential part of all laboratory work in science; and every certificate for science work must include a statement that this condition has been fulfilled.

1. **Botany.**—The work in botany should consist of (1) the study of a standard text; (2) four or five exercises per week, at least one of which should be laboratory work. Either half of a year or an entire year's work will be accepted.

2. **Chemistry.**—Elementary inorganic chemistry. Should cover the commoner nonmetallic and metallic elements with their most important compounds, together with an introduction to the general theoretical principles. Calculations based upon changes of gaseous volumes and chemical equations. A year's work of four or five exercises per week, at least one of which should be laboratory work.

3. **Physics.**—The standard work in physics should consist of (1) The study of a standard text; (2) not less than forty experiments worked out in the laboratory by each student and properly recorded in a suitable notebook.

4. **Zoölogy.**—A study of the fundamental principles of animal structure and the dissection of type forms. The student should become familiar with the characteristics of the various phyla of the animal kingdom. Four or five exercises per week, at least one of which should be laboratory work. Either half of a year or an entire year's work will be accepted.

GROUP E. FOREIGN LANGUAGES.

Preparatory schools will be required to certify with regard to the oral and aural qualifications of their students.

1. **French.**—Work of the first year should include (1) careful drill in pronunciation, (2) drill upon the rudiments

of grammar, (3) abundant translation of simple English prose into idiomatic French, (4) reading of from 100 to 175 pages of French prose, (5) writing French from dictation. Work of the second year should include (1) the reading of from 250 to 400 pages of easy modern prose, (2) constant practice in translating from English into French variations of the text read, (3) frequent paraphrases of the text read, (4) dictation.

2. **German.**—Work of the first year should include (1) careful drill in pronunciation, (2) drill upon the rudiments of grammar, such as the inflection of the articles, the common nouns, adjectives, pronouns, and strong and weak verbs, upon the uses of the prepositions, the modal auxiliaries, and the rules of syntax and word order, (3) writing from dictation, (4) the reading of from 75 to 100 pages of prose, (5) translation from English into German. Work of the second year should include (1) the reading of from 150 to 200 pages of prose, (2) constant practice in translating from English into German variations of the text read, (3) dictation, (4) continued drill upon the rudiments of grammar, (5) frequent paraphrases of the text read.

3. **Greek, Elementary.**—Books I and II of Xenophon's Anabasis, Books III and IV of the Anabasis or their equivalent in other Attic prose. Two years' work.

4. **Latin, Elementary.**—Grammar and four books of Caesar. Two years' work.

5. **Latin, Advanced.**—Virgil, six books. Cicero, six orations.

GROUP F. VOCATIONAL SUBJECTS.

1. Agriculture.

Agronomy.—A textbook or lecture and recitation course upon the formation, classification, composition, physical properties and tillage of soils; the kinds, use, value, and

function of different chemical fertilizers; the use, composition, and preservation of farm manures; the planting, cultivation, harvesting, use, and marketing of the different kinds of field crops. The textbook and lecture work should be supplemented by field and laboratory exercises. Four or five periods per week for one year.

Animal Husbandry and Dairying.—A textbook and recitation course upon the types and breeds of horses, cattle, sheep, swine, and poultry with practical exercises in stock judging; a study of the principles of feeding, the classification of animal foods, with practice in computing and mixing rations. Also a course upon the composition, properties, care and handling of milk, with practical exercises in testing milk, cream, and butter with the Babcock test. Four or five exercises per week for one year.

Horticulture.—A textbook or lecture and recitation course upon the classes and varieties of fruits; the location and fertilization of orchards; the pruning, grafting, and spraying of fruit trees, with some study of fungous and insect pests. Practical exercises in picking, packing, and marketing of fruit. Also a course in vegetable growing in which each student learns the classes, varieties, uses, and adaptations of our most important vegetables. Practical gardening work in growing vegetables. Four or five exercises per week for one year.

Rural Economics and Farm Management.—A textbook, lecture and recitation course upon the economic relations of land, labor, and capital. A detailed study of the cost of producing and marketing farm and garden crops. Also a study of the business end of farming, buying and selling methods, types of farming, systems of rotation, the keeping of farm accounts, and the making of inventories. Four exercises per week for one year.

2. **Commercial Subjects.**—Bookkeeping, commercial arithmetic, commercial geography, stenography, and typewriting.

3. **Domestic Arts.**—Foods and cookery, dressmaking, household sanitation and mechanical appliances, household economics, household design and decoration.

4. **Mechanic Arts.**—Casting, drawing, forging, machine work, molding, pattern-making, woodwork.

REQUIREMENTS FOR DEGREES.

The degree of Bachelor of Science is conferred in the different divisions of the college upon completion of the following requirements:

Agricultural Division.

The completion of the following semester hours:

In 1915, 150 hours.
In 1916, 145 hours.
In 1917, 140 hours.

The completion of the studies required in one of the following branches:

(a) Animal Husbandry and Dairying.
(b) Forestry.
(c) Horticulture.
(d) General Agriculture.

Students graduating from the four-year courses in agriculture must present to the dean on or before the second Tuesday preceding commencement satisfactory evidence of having had practical experience in farm work, either through having lived on a farm for at least two years subsequent to the age of 12 or through having worked on a farm for at least six months subsequent to the age of 16.

Students graduating from the Forestry Course must have spent at least three months in practical forest work, which time will be counted as a part of the six months requirement.

Arts and Science Division.

(a) General Arts and Science.

1. The completion of the following semester hours:

In 1915, 136 hours.
In 1916, 136 hours.
In 1917, 132 hours, of which a minimum

of 18 shall be required each semester of the freshman year and a minimum of 16 hours each semester thereafter.

2. The completion of English 51 and 52.

3. The completion of major and minor requirements as follows:

The Arts and Science courses are divided into three groups:

Group I.—Languages and Literature: English, French, German, Latin, Spanish.

Group II.—Mathematics and Sciences: Mathematics, Zoölogy, Botany, Geology, Meteorology, Chemistry, Home Economics, Agriculture,* Drawing, Physics.

Group III.—History, Social Science, and Psychology: History, Political Science, Economics, Sociology, Psychology.

All Arts and Science students shall elect one of these groups as a major in which 24 semester hours must be completed. A grade of 70 must be received in all subjects offered as a fulfilment of the major group requirement. The other two groups shall be minors, in each of which the student is required to complete 18 hours of work.

The selection of the major shall be made at the beginning of the junior year and submitted for approval to the secretary of the Arts and Science Committee at the time of registration.

(b) Home Economics.

The completion of 132 semester hours.

The completion of the courses required in the Home Economics branch.

(c) Mechanic Arts for Teachers.

The completion of 142 semester hours.

The completion of the courses required in the Mechanic Arts Course for Teachers.

* Agriculture as a part of minor requirement only.

Engineering Division.

The completion of the following semester hours:

In 1915, 152 hours.
In 1916, 148 hours.
In 1917, 144 hours.

The completion of the studies required in one of the following branches:

(a) Chemical Engineering.
(b) Electrical Engineering.
(c) Mechanical Engineering.

THESES.

The preparation of a thesis upon some subject connected with the work of the division may be required of candidates for a degree by the division committee.

The subject of a thesis, together with a written approval by the head of the department concerned, must be filed with the registrar within one week of the opening of the second semester. The thesis is to be submitted to the head of the department not later than the second Tuesday preceding commencement day.

It is to be typewritten or printed upon standard thesis paper, eight and one-half by eleven inches, medium weight, and must be neatly bound in black cloth and gilt-lettered on the first cover with title, name of author, degree sought and year of graduation. This bound copy is to be filed and left with the college librarian before commencement day.

SENIOR STANDING AND DEFICIENCIES.

The regular work of the senior class, including the regular final examinations, is completed at 4 p. m. on the Tuesday of the week preceding commencement, and each member of the class may receive a statement of his standing at the office of the registrar at 2 p. m. on the following Thursday.

All deficiencies must be removed by 6 p. m. of the Saturday of the same week.

ADVANCED DEGREES.

Advanced degrees may be conferred upon candidates who have received the degree of B.S. from this college or any institution of like standing upon the fulfilment of the following requirements:

Degree of M.S.—The successful completion of a course of graduate study pursued in residence and approved by the faculty of the college.

The preparation of an original thesis satisfactory to the faculty of the college.

Degree of M.E.—Professional experience of at least four years.

The successful completion of a course of graduate study approved by the Engineering Division Committee.

The preparation of an original thesis satisfactory to the faculty of the college upon some subject approved by the Engineering Division Committee.

For details concerning the regulations governing the conferring of degrees address Dean C. H. Pettee.

FOUR-YEAR COURSES.

AGRICULTURAL DIVISION.

The courses of this division are designed for the general education and scientific training of students in the various economic branches of agriculture. The lecture and recitation work of the classroom is supplemented largely by practical exercises in the laboratories. Seminary courses are also given, especially for seniors and advanced students. The whole curriculum is so arranged that about one third of the studies may be termed cultural, one third, scientific, and one third, technical. During junior and senior years the student has elective options in certain courses of study which enable him to specialize in animal husbandry and dairying, horticulture, forestry or general agriculture.

While the two-year course is intended to give the student as thorough training in the science and practical details of farm operations as the time will allow, it does not give the opportunity for a broad general foundation of pure and applied science that the four-year courses afford; the latter courses aim primarily to combine a college education with that of a technical vocation. Many of the graduates of the four-year courses return to the farm for the purpose of putting into practice the knowledge and training of their college work, and many of them are becoming successful and prosperous citizens of the community; others who have no farms of their own accept salaried positions as superintendents or foremen on the dairy, fruit or truck farms of large owners; still others take positions as teachers of science and agriculture in our secondary and high schools or as assistants in our agricultural colleges and experiment stations.

The Agricultural Division offers the following four-year courses of study:

Animal Husbandry and Dairy Course.—This course is designed for those students who wish to specialize either in animal husbandry or dairying. Election of courses of instruction between these two departments may be made throughout the junior and senior years. The dairy building with its new and complete equipment, together with the additional courses and increased facilities for instruction in the animal husbandry department, make this course especially attractive.

Forestry Course.—The forestry course offers to students who have entered the agricultural division an opportunity to specialize in forestry during the junior and senior years. This arrangement allows the student to devote a large amount of time to the various branches of forestry, but at the same time requires a foundation of agriculture and the subjects upon which agriculture depends. The forestry department is located on the second floor of Morrill Hall. The college forest of sixty acres of old-growth pine and hemlock, and other areas of natural and planted growth, furnish the laboratory for the forestry student. Ample opportunity is given to study the various forest problems on the ground as well as in the class room.

Horticultural Course.—This is the course for those students who contemplate making a specialty of some line of horticultural work. Several advanced courses in botany will be required, while during the senior year opportunity will be given to elect courses in other departments. The horticultural department is well equipped with gardens, orchards, greenhouses and laboratories for the study of the different phases of this industry, especially fruit growing, which is so prominent in the agriculture of the state.

General or Teaching Course in Agriculture.—This course is intended for those students who desire to secure a general training in the science of agriculture without specializing along some particular line. Provision is made during both the junior and senior years for the student to

elect one or more courses of instruction in whatever department he wishes.

The rapidly increasing demand for teachers in agriculture in our secondary schools has indicated the necessity of training men especially for this important line of work. In addition to the sciences and strictly agricultural work courses in pedagogy, educational psychology and rural sociology are taken during the junior and senior years.

ARTS AND SCIENCE DIVISION.

In the Arts and Science Division the following courses are offered:

General Arts and Science Course.—This course provides a general college training which especially prepares for secondary school teaching, business or graduate study. By means of the group system of elective studies an opportunity is given the student to specialize in zoölogy, botany, chemistry, physics, drawing, agriculture, mathematics, modern languages, English, psychology, sociology, political science, economics, history, home economics, and education.

Department of Education.—The college announces for next year a new department of education. This department has been established in order adequately to fulfill an increasing demand from the schools of the state that the institution furnish graduates well prepared for teaching in the public schools, especially in the high schools. The demand for teachers of manual arts, domestic science and agriculture recently has greatly increased. Teaching has become a profession that requires specific professional training, and, recognizing this, the college offers in its department of education courses that provide the professional preparation needed by those who plan to become well-trained teachers or school administrators. These courses are open to both men and women.

Home Economics Course.—The course in home economics furnishes instruction in the branches that especially serve the need of women students. The work is planned to meet

the demands of the day for scientific training in home making, to fit students to enter fields of professional activity in institutional and educational lines of work, and to provide thorough but somewhat less technical training for those students who wish to elect home economics as either a major or a minor subject in the Arts and Science Course.

The technical work in household science is based upon the principles of physical, biologic and social sciences. The courses in foods, nutrition and dietetics require chemistry and physiology; those in sanitation and home nursing necessitate a knowledge of chemistry and bacteriology; home administration and the care and education of children, a knowledge of the principles of economics, psychology and sociology; and an understanding of the energy value of foods and their mechanical equivalents in work necessitates a knowledge of physics. These subjects are taken in the different departments of the college. The training in drawing, color, and design which is gained in the department of drawing finds a worthy expression in the courses in costume design, household art, and home decoration.

In the arrangement of studies electives have been provided for in each year. The student is permitted to elect three semester hours of work in the freshman year, six in the sophomore year and semester hours amounting to nearly half of the total requirements for junior and senior years. This large amount of elective work affords ample opportunity for the study of modern languages, history, mathematics, social and political sciences, or courses of interest to women in the other departments of the college. Provision is made for research work in the senior year for students who are prepared for it.

Mechanic Arts Course for Teachers.—This course provides an opportunity for preparation for the teaching of manual courses in secondary schools and institutions. It originated to meet the increasing demand for graduates of the college qualified to teach manual and mechanic arts courses. Although much of the work of this course is necessarily prescribed in such subjects as drawing, mathe-

matics, shop work, English and psychology, a reasonable opportunity is given the student to elect other subjects in the Arts and Science Division. At the present time the demand for graduates from this course for secondary teaching is greater than the college can satisfy.

ENGINEERING DIVISION.

Chemical Engineering Course.—This course is intended to fit for the career of professional chemist or chemical engineer, and to give a good foundation for original and independent chemical research.

Instruction is imparted by lectures, recitations and a large amount of carefully supervised laboratory work. The laboratory course is largely an individual one and the work of each student is conducted with reference, not only to the particular object he may have in view, but also to the acquirement of a broad knowledge of chemical science. The student is given a thorough training in German and French to enable him to read with ease the chemical literature; a thorough grounding in mathematics, necessary for advanced theoretical chemistry or chemical engineering; a somewhat limited amount of special engineering work, both mechanical and electrical; and a thorough undergraduate training in theoretical and applied chemistry. He is encouraged to develop the power of solving chemical problems by independent thought through the aid of the reference works and chemical periodicals which the library contains.

Electrical Engineering Course.—The electrical engineering course is intended to meet the demands of a young man fitting himself for practical and professional engineering in connection with the various applications of electricity.

By means of lectures, recitations and laboratory work, the subjects of the course are brought to the attention of the student in such a manner as not only to emphasize the present needs of the practitioner and engineer, but to give

him the groundwork that will enable him to grasp and understand the constantly increasing number of problems that require solution.

The instruction aims to impart a complete practical and theoretical knowledge of the best modern types of electrical machines and appliances and the methods of designing, building and operating them.

The rapid progress in recent years in applying electricity to commercial uses renders it difficult, if not impossible, for one without a technical education to gain prominence in the work and be intrusted with its more responsible positions.

Mechanical Engineering Course.—The mechanical engineering course is intended to train young men for positions of responsibility in the field of the mechanical industries. The studies in the course are scientific, including mathematics, physics and chemistry; technical, including drawing, shop work, thermodynamics, hydraulics, machine design, electrical engineering, power engineering, and cultural studies, calculated to enable the technical man to take his proper place in the world of men.

Instruction is given by means of text-book work and laboratory work whenever possible. When necessary this work is supplemented by illustrated lectures and assigned reading. Throughout the course the theoretical work is supplemented by actual practice in mechanical operation and scientific research, by training in the use of tools for working wood and metals, and by experimental tests and demonstrations in the mechanical, chemical and physical laboratories.

POST-GRADUATE AND SPECIAL COURSES.

The college offers opportunity for post-graduate study in agriculture, biology and chemistry, and on the completion of satisfactory work advanced degrees will be given. Persons of mature years presenting satisfactory evidence of their ability to complete any desired course of study may be admitted as special students by vote of the faculty.

DESCRIPTION OF STUDIES.

An elective subject will be given only when there is a suitable number of students taking the same.

AGRONOMY.

PROF. TAYLOR, MR. PRINCE.

51. Farm Equipment and Machinery.

Lectures and recitations upon the equipment of farms; fencing; drainage; tillage and harvesting machinery; concrete construction; silos; farm motors; roads and principles of draft. Practical work in map making, laying out drains, rope splicing, comparing farm machines, etc. For Agricultural Sophomores. *Three exercises per week. 1st S.*

52. Soils.

Text-book and recitations upon the formation, kinds and physical properties of soils; the movements and conservation of soil moisture; the relation of heat and air to soil; the nature and physical effects of tillage and fertilizers; laboratory work and experimentation with soils to show the physical effects of different conditions and texture. For Agricultural Juniors. *Three exercises per week. 2d S.*

53. Farm Crops.

Text-book and recitations upon the history, use, value and methods of culture of our various farm crops, including hay and grass, with particular reference to New England conditions. Laboratory practice in judging the different varieties of grains and grasses. For Agricultural Juniors except in Forestry Course.

Three exercises per week. 1st S.

54. Fertilizers.

Lectures, text-book and recitations upon the principles of fertility and plant nutrition. A study of the value and use of plant food materials, including farm manures. For Agricultural Seniors except in Forestry Course.

Prerequisites—Chemistry 51 and 52. Three exercises per week. 2d S.

55. Farm Management.

Text-book, lectures and recitations upon the development of farming as a business, types of farming, size of farms, cropping systems, live stock problems, marketing farm products, and choosing and buying a farm. Practical work will be given in laying out, planning, scoring and making inventories of farms. Farms in the community will be

visited and a study will be made of data secured from those which show good and poor management. For Agricultural Seniors, except in Forestry Course.

Prerequisite—Agronomy 51. *Three exercises per week. 1st S.*

56. Special Agronomy.

Advanced work for students interested in some particular line. No class exercises. The hours and kind of work must be arranged with the department before the course is elected. For Agricultural Seniors.

Prerequisite—All preceding courses in Agronomy except 54.

Three exercises per week. 2d S.

57. Agricultural Seminar.

Library and reference work, the preparation of bibliographies, a study of the work and history of agricultural colleges and experiment stations. Lectures upon the history of agriculture. Elective for Agricultural Seniors. *Two exercises per week. 1st S.*

58. Farm Accounting.

Lectures and laboratory work in farm accounting. A study will be made of some of the simpler methods of accounting which are adaptable to farming operations. A more complete system including labor records, cost of machinery operation, cost of fertilization, marketing, and other factors entering into the cost of production will be studied.

For Agricultural Juniors. *Two exercises per week. 2d S.*

ANIMAL HUSBANDRY.

PROF. ECKMAN, ASST. PROF. MITCHELL, MR. LADD.

51. Types and Breeds of Live Stock.

A study of the different breeds of horses, cattle, sheep, and swine in respect to their origin, history, development, characteristics, and adaptability to different conditions of climate and soil. One afternoon each week is devoted to judging the different breeds. For Agricultural Sophomores. *Four exercises per week. 1st S.*

52. Advanced Stock Judging.

The work of this course consists of a study of the principles and practice of judging live stock, market classes and grades of horses and cattle, and a brief study of the large stock markets and shows. Students intending to compete for the live stock judging teams should elect this course. Elective for Agricultural Sophomores. Open to students only by permission of the head of the department.

Prerequisite—Animal Husbandry 51. Two exercises per week. 2d S.

54. Feeds and Feeding.

Lectures and recitations upon the laws of nutrition, the character and composition of feed stuffs and methods of feeding different kinds of farm animals. Practice is given in calculating rations for various purposes. For Agricultural Juniors in Animal Husbandry and Dairying and General Agricultural courses. Elective for others.

Prerequisites—Chemistry 51 and 52. Three exercises per week. 2d S.

55. Veterinary Anatomy.

Lectures and recitations upon the form and structure of the domesticated animals. Special attention is paid to the study of the horse and cow. Skeletons, various anatomical specimens, models, charts and lantern slides are used to make the subject as practical as possible. This course is designed to give a foundation for the study of animal diseases. For Animal Husbandry Juniors. Elective for others.

Three exercises per week. 1st S.

56. Animal Diseases.

Lectures and recitations upon the more common diseases of farm animals and methods of prevention and treatment, simple surgical operations, castration, horse-shoeing and soundness. For Animal Husbandry Juniors. Elective for others. K in 55 will bar from this course.

Prerequisite—Animal Husbandry 55. Three exercises per week. 2d S.

57. Animal Breeding.

A study of the principles and practices of breeding farm animals. Practice is given in studying and tracing out pedigrees. For Seniors in Animal Husbandry and Dairy Course.

Prerequisite—Animal Husbandry 51. Three exercises per week. 1st S.

58. Live Stock Management.

Lectures and recitations upon the care and management of breeding and show animals. Elective for Agricultural Seniors.

Prerequisites—Animal Husbandry 51, 54, 56, and 57.

Three exercises per week. 2d S.

60. Poultry.

In this course are discussed the location of a poultry farm, poultry buildings, poultry house construction, types and breeds of poultry, caponizing, killing and dressing, and fattening. Elective for Agricultural Juniors. *Three exercises per week. 2d S.*

61. Poultry.

This course covers the subjects of poultry foods and feeding, incubation, brooding, markets, poultry diseases, and poultry farm problems. Elective for Agricultural Seniors. *Three exercises per week. 1st S.*

62. Poultry.

Poultry farm management. A discussion of operations on poultry farms, locating the plant in reference to the farm, and working out poultry problems. Elective for Agricultural Seniors.

Three exercises per week. 2d S.

63. Animal Diseases.

A continuation of Animal Husbandry 56. Elective for Agricultural Seniors.

Prerequisite—Animal Husbandry 56. Three exercises per week. 1st S.

BOTANY.

PROF. BUTLER, ASST. PROF. BLACK, MISS TEMPLETON.

51. General Botany.

Morphology and histology of plants. Lectures and laboratory work. For Agricultural Sophomores. Elective for other students. Given in two sections. *Three exercises per week. 1st S.*

52. General Botany.

Organography and classification of plants. Lectures and laboratory work. For Agricultural Sophomores. Elective for other students. Given in two sections.

Prerequisite—Botany 51. Three exercises per week. 2d S.

53. Plant Physiology.

Structure and properties of the cell, absorption and movement of water; metabolism; growth and irritability. Lectures and laboratory work. For Forestry, Horticultural and General Agricultural Juniors. Elective for other students.

Prerequisite—Botany 52. Three exercises per week. 1st S.

54. Plant Histology.

Technique. Characterization and differentiation of plant tissues. Comparative histology. Occasional lectures; laboratory work. For Forestry Juniors. Elective for other students.

Prerequisite—Botany 52. Three exercises per week. 2d S.

55. General Bacteriology.

Lectures on the morphology and physiology of the bacteria, the principal bacterial diseases, the rôle of bacteria in the arts and industries. Lectures. For Home Economics Juniors. Elective for other Juniors and Seniors. *Three exercises per week. 1st S.*

56. Bacteriology.

Technique. Morphology and biology of the principal non-pathogenic and pathogenic bacteria. Laboratory work.

Prerequisite—Botany 55 except for Animal Husbandry and Dairy students. Three exercises per week. 2d S.

57. Plant Pathology

Diseases of plants, their symptoms, cause and prevention. Lectures and laboratory work. For Forestry and Horticultural Seniors. Elective for other students.

Prerequisite—Botany 53. Three exercises per week. 1st S.

58. Mycology.

Morphology and biology of the fungi. For advanced students. Occasional lectures, laboratory work.

Prerequisite—Botany 57. Two exercises per week. 2d S.

59. Embryology.

Technique. Origin and development of the embryo. For advanced students. Occasional lectures; laboratory work.

Prerequisite—Botany 53. Two exercises per week. 1st S.

60. Advanced Botany.

For advanced students. Prerequisites will depend on the nature of the subject selected for study.

Credit and hours by arrangement. 2d S.

61. Advanced Botany.

For advanced students. Prerequisites will depend on the nature of the subject selected for study.

Credit and hours by arrangement. 1st S.

CHEMISTRY.

PROF. JAMES, ASST. PROF. PERLEY, MR. STEWART, MR. BULLARD.

51. Inorganic Chemistry.

Lectures and recitations on general and theoretical chemistry, illustrated by experiments, charts, specimens, lantern views, etc. Solution of chemical problems will be required. For Agricultural and Engineering Freshmen. Elective for other Freshmen.

Three exercises per week. 1st S.

52. Inorganic Chemistry.

A continuation of Course 51, but the time will be mainly spent on the metallic elements, their metallurgy, salts, etc.

Prerequisite—Chemistry 51. Three exercises per week. 2d S.

54. Qualitative Analysis.

Laboratory practice, with occasional lectures and recitations. The student is expected to become proficient in the separation and detection of the common acids and bases and to keep a full set of notes. For Engineering Freshmen.

Prerequisite—Chemistry 51. Three exercises per week. 2d S.

55. Inorganic Chemistry.

Similar to Chemistry 51. For Home Economics Freshmen.

Three exercises per week. 1st S.

56. Special Chemistry.

A continuation of Course 55 and differing slightly from Course 52.

Prerequisite—Chemistry 55. Three exercises per week. 2d S.

57. Special Organic Chemistry.

A study of the more important organic compounds from the viewpoint of the Home Economics student. For Home Economics Sophomores.

Prerequisites—Chemistry 55 and 56. Three exercises per week. 1st S.

59. Introductory Qualitative Analysis.

A brief introductory course in qualitative analysis specially arranged for Agricultural students. For Agricultural and Mechanic Arts Sophomores. Elective for Arts and Science students.

Prerequisite—Chemistry 51. Two exercises per week. 1st S.

60. Quantitative Analysis.

Introduction to quantitative analysis, consisting of the analyses of simple compounds and materials such as feeds, fertilizers, soils, water, etc. For Agricultural Sophomores.

Prerequisites—Chemistry 51 and 52. Three exercises per week. 2d S

61. Qualitative Analysis.

A short advanced course for Chemical Sophomores on insoluble substances and the rarer elements, to precede Chemistry 65.

Twenty exercises. 1st S.

63. Inorganic Preparations.

A brief course upon the preparation and purification of inorganic compounds, including their extraction from minerals. For Chemical Sophomores.

Prerequisites—Chemistry 51 and 52. Twelve exercises. 1st S.

65. Quantitative Analysis.

A preliminary course in quantitative analysis to familiarize the student with the general methods of chemical manipulation and analysis. For Chemical Sophomores. Elective for Arts and Science Sophomores, Juniors and Seniors, provided laboratory facilities permit.

Prerequisites—Mathematics 52, German 1 and 2, Chemistry 54.

Four exercises per week. 1st S.

66. Quantitative Analysis.

A continuation of Chemistry 65. For Chemical Sophomores.

Five exercises per week. 2d S.

68. Organic Chemistry.

67a.

Lectures and recitations. A study of the chemistry of the carbon compounds. For Chemical Sophomores. Elective for Arts and Science students.

Prerequisites—Chemistry 51 and 52. Three exercises per week. 2d S.

67a.

Two exercises per week. 1st S.

69. Organic Chemistry.

68a.

A continuation of Course 68. For Chemical Juniors and Chemical Sophomores. Elective for Arts and Science students.

Prerequisite—Chemistry 68. Two exercises per week. 1st S.

68a.

Three exercises per week. 2d S.

71. Organic Chemical Laboratory.

The course consists mainly of laboratory practice in preparing and purifying organic compounds. Lectures and recitations will be held from time to time in connection with the practice. For Chemical Juniors. Elective for Arts and Science students.

Prerequisite—Chemistry 68. *Three exercises per week. 1st S.*

73. Advanced Quantitative Analysis.

This course will be made to fit the end which each student has in view and will be largely an individual one. For those students desiring to specialize in agricultural and food chemistry the analysis made will tend in the main toward agricultural products, fertilizers, mucks, marls, manures, dairy products, waters, foodstuffs, sugars, etc. For the student wishing to enter metallurgical works, the analyses will be in the main upon iron and steel and other metals, ores, limestones, slags, alloys, fuels, etc. As a preparation for the study of medicine, work will be done on poisons, drugs, foods, urine, etc. Other lines will be arranged to meet the wants of the individual student. Each student will be given some practice in all of the branches of agricultural, metallurgical, medical, sanitary and industrial chemistry, in order to lay a foundation for any future work which may be required of him. A short course in gas and oil analysis will also be provided. For Chemical Juniors.

Prerequisite—Chemistry 65. *Four exercises per week. 1st S.*

74. Advanced Quantitative Analysis.

A continuation of Chemistry 73. For Chemical Juniors.

Five exercises per week. 2d S.

75. Physical Chemistry, Lectures.

Advanced study of chemical theory. Practical experiments will be performed with the aid of the student, in the determination of vapor density, molecular weights, specific heat, etc.; and the study of isomorphism, diffusion of gases, solutions, ionization, electrolysis, molecular and atomic volume, thermo chemistry, equilibrium, the phase rule, etc., will take up much of the time. For Chemical Juniors or Seniors. Elective for Arts and Science students.

Prerequisites—Chemistry 51 and 52. Three exercises per week. 1st S.

76. Physical and Electro Chemistry, Lectures.

A continuation of Course 75. For Chemical Juniors or Seniors. Elective for Arts and Science students. *Three exercises per week. 2d S.*

77. Advanced Inorganic Chemistry.

Advanced study of the elements and their compounds. For Chemical Juniors and Seniors. Elective for Arts and Science students.

Prerequisites—Chemistry 51 and 52. Three exercises per week. 1st S.

78. Industrial Chemistry.

Lectures on chemical manufactures, such as sugar, sodium carbonate, fertilizers, sulphuric acid, glass, matches, paints, dyes, soaps, illuminating gas, petroleum, etc. The lectures will be illustrated by lantern views, and trips to the leading New England cities to examine important chemical manufactures will be taken as far as practicable. For Chemical Juniors or Seniors.

Prerequisites—Chemistry 51 and 52. Two exercises per week. 2d S.

79. Assaying.

A course in the fire assay of gold and silver ores. For Chemical Seniors.

Prerequisite—Chemistry 65. Seventeen exercises. 1st S.

80. Metallurgy.

Lectures describing the processes employed in the smelting of ores, of iron, lead, copper, zinc, silver, gold, etc., and the methods used in refining these metals. The lectures are illustrated by stereopticon and by specimens of metallurgical products. For Chemical Juniors or Seniors.

Prerequisites—Chemistry 51 and 52. One exercise per week. 2d S.

Chemistry 78 and 80 are given in alternate years with Chemistry 76.

83. Advanced Quantitative Laboratory.

Especially arranged for students of the Chemical Engineering Course. May merge at any time into 84 and will usually do so about the middle of the first semester. For Chemical Seniors.

Six exercises per week. 1st S.

84. Thesis. (Chemical Research.)

The work of the last semester of the Chemical Engineering Course is given up to the special study of some selected subject in any branch of chemical science and the student is required to present a thesis showing him to be capable of independence of thought and manipulation. For Chemical Seniors. *Seven exercises per week. 2d S.*

DAIRYING.

PROF. RASMUSSEN, MR. WILSON.

51. Domestic Dairying.

Nutritive and economic value of milk; milk hygiene, and the relation of milk to public health; market milk, modified milk, condensed milk, milk powders, fermented milks; butter, cheese and ice cream. Laboratory exercises are given in manufacture and in testing purity of dairy products. Two lectures and one laboratory period. Elective for Home Economics and Arts and Science Juniors and Seniors.

Three exercises per week. 1st S.

52. Farm Dairying.

Dairying in its relation to other branches of agriculture and other industries; study of the composition of milk; the use of the Babcock test, and tests for determining acidity of milk; the use of the lactometer in detecting adulteration of milk; value and methods of keeping records of dairy cows; coöperation in dairying. *Three exercises per week. 2d S.*

53. Butter Making.

A study of the secretion, and of the chemical and physical properties of milk; different systems of creaming, and factors influencing efficiency of hand separators; pasteurization, cream ripening, commercial starters, churning and machinery. Required for Animal Husbandry and Dairy Juniors. Elective for other Agricultural students.

Prerequisite—Dairying 52. *Three exercises per week. 1st S.*

54. Market Milk.

A study of the value of milk as a food; the production and handling of market milk, of certified and modified milk, and commercial milk inspection. Exercises will be given in the judging of milk and cream and scoring of dairy barns. For Animal Husbandry and Dairy and General or Teaching Juniors. Elective for all other students.

Prerequisite—Dairying 52. *Three exercises per week. 2d S.*

55. Factory Management.

Lectures and recitations on the organization, location, construction and operation of factories; special problems connected with the manufacture of butter; dairy conditions in foreign countries; scoring of butter. Elective.

Prerequisites—Dairying 52 and 53. Three exercises per week. 1st S.

57. Dairy Bacteriology.

Methods of bacteriological analysis of milk and its products; isolation and study of the different types of dairy bacteria; relation of bacteria

to milk and its products; study of effect of separation, clarification, pasteurization, aëration, and straining on bacteria in milk; and the application of bacteriological principles to the dairy industry. Elective for Animal Husbandry and Dairy Seniors.

Prerequisite—Botany 56. *Three exercises per week. 1st S.*

58. Cheese Making.

Lectures and laboratory work covering the details of manufacture, curing and marketing of the more important kinds of cheese.

Prerequisite—Dairying 52. *Three exercises per week. 2d S.*

60. Ice Cream Making.

A study of the making, handling, and marketing of lacto, ices, and ice cream. Elective.

Prerequisite—Dairying 52. *Two exercises per week. 2d S.*

62. Judging Dairy Products.

Practice in judging milk, cream, butter, cheese and ice cream. One lecture and one laboratory. Elective.

Prerequisites—Dairying 52, 53, 54. *Two exercises per week. 2d S.*

64. Dairy Research.

A study of the work of the experiment stations and other dairy literature. Elective.

Prerequisite—6 credit hours in Dairying.

Two exercises per week. 2d S.

DRAWING.*

PROF. HUDDLESTON, MR. LATON.

These courses are of an industrial nature and include the mathematical, architectural and free-hand branches of the subject.

51. Engineering Drawing. Mr. Laton.

Free-hand lettering; free-hand drawing; use of drafting instruments; mathematical drawing; inking; systems of object drawing; orthographic projection and isometric drawing. For Engineering and Mechanic Arts Freshmen.

Two exercises per week. 1st S.

* Students are advised not to purchase drawing supplies before consultation with the drawing instructor.

54. Industrial Drawing. Prof. Huddleston.

Instruction in this course includes drafting room exercises in the use of drawing instruments; projection drawing as a study of the relation of different views to one another of a given object or structure; isometric drawing as a study in pictorial representation; together with the drawing of plans of simple farm buildings. Recitation periods are given to a brief study of farm building construction, heating, lighting and ventilation, including necessary bills of materials and approximate cost of construction. For Agricultural Freshmen.

Two exercises per week. 2d S.

55. Color Problems. Prof. Huddleston.

A study of color theories, harmonies, qualities and nature color. The object of this course is to give to students a working knowledge of color such as will help them to express themselves appropriately in their clothing as well as develop good taste in color selections for home decoration. For Home Economics Sophomores.

Two exercises per week. 1st S.

56. Descriptive Geometry. Mr. Laton.

Recitations and drawing exercises in the solution of geometrical problems by orthographic projection, including practical problems on bridge beams, rafters and piping, etc. For Electrical and Mechanical Freshmen.

Prerequisites—Drawing 51 and Mathematics 53.

Three exercises per week. 2d S.

57. Machine Drawing. Mr. Laton.

Working drawings, including the making of tracings, blue prints, and Van Dyke prints of various machines and machine tools. For Electrical and Mechanical Sophomores.

Prerequisite—Drawing 51. *Three exercises per week. 1st S.*

58. Descriptive Geometry. Mr. Laton.

Recitations and drawing exercises in the solution of geometrical problems by orthographic projection, including practical problems arranged to meet the needs of Mechanic Arts Students. For Mechanic Arts Freshmen.

Prerequisites—Drawing 51 and Mathematics 53.

Three exercises per week. 2d S.

60. House Planning. Prof. Huddleston.

Instruction is given in free-hand lettering; the use of drafting instruments; and projection drawing as a study of the relation of views to one

another of a given object or structure; together with the drawing and an analytic study of house plans with special reference to local conditions. For Home Economics Freshmen. *Two exercises per week. 2d S.*

61. Practical Mathematics. Mr. Laton.

The instruction in this course is directly related to practical problems the student will meet in his shop work and includes useful applications of algebra, geometry and the first principles of trigonometry. For Mechanic Arts Sophomores. *One exercise per week. 1st S.*

62. Machine Drawing. Mr. Laton.

A study of machine details, including the making of shop drawings and blue prints. For Mechanic Arts Sophomores.
Prerequisite—Drawing 58. *Two exercises per week. 2d S.*

64. Free-hand Drawing. Prof. Huddleston.

Pencil drawing from geometrical models and free-hand perspective, followed by charcoal drawing from plaster casts of historic ornament and antique sculpture. Elective for all students.
Two exercises per week. 2d S.

65. Mechanical Drawing. Mr. Laton.

A continuation of Drawing 62, including the study of cam design. For Mechanic Arts Juniors. *One exercise per week. 1st S.*

66. Mechanical Drawing. Mr. Laton.

A continuation of Drawing 65, including the study of gear design. For Mechanic Arts Juniors. *Two exercises per week. 2d S.*

68. The House. Prof. Huddleston.

A course dealing with the house-structure considered from the standpoint of economics and of architecture. A study of the relation of the house plan to home-making; to the individual family; individual site, garden and accessory buildings. For Home Economics Sophomores.
Prerequisites—Drawing 60, Home Economics 2.
Two exercises per week. 2d S.

71. Mechanic Arts Drawing. Prof. Huddleston.

A A correlation of shop and drawing courses with special attention given to the making of small scale detail drawings of simple forms of cabinet work. For Mechanic Arts Seniors.
Prerequisites—Drawing 62 and Shop 65.
One exercise per week. 1st S.

72. Advanced Practical Mathematics. Mr. Laton.

A continuation of Drawing 61, directly related to practical problems the student will meet after he has finished his course. For Mechanic Arts Seniors.

Prerequisite—Drawing 66. *One exercise per week. 2d S.*

74. Architectural Drawing. Prof. Huddleston.

A study in the interpretation of architectural drawings, including the laying out of full size details from small scale drawings and architects' blue prints. For Mechanic Arts Seniors.

Prerequisite—Drawing 71. *One exercise per week. 2d S.*

ECONOMICS.

PROF. SMITH.

1. Elementary Economics.

A survey of the general field of economics, including such fundamentals as value, price, consumption, production, exchange, land, labor, capital, rent, wages, interest, profits, money, and international trade.

Two sections: one for Agricultural and Engineering Seniors; the other for Arts and Science and Mechanic Arts Sophomores.

Three exercises per week. 1st S.

2. Commercial Geography.

A study of the commodities of commerce; the factors which influence their production; the regions of their productions, markets and exchange facilities, and the principal commercial countries of the world. For Arts and Science Freshmen and Sophomores.

Three exercises per week. 2d S.

4. Money and Banking.

A study of the principles of money; credit; bimetallism; the national banking systems of the United States and foreign countries; trust companies. Elective for Arts and Science Juniors and Seniors, Agricultural Seniors, and Mechanical and Electrical Engineering Seniors.

Economics 4 and 6 are given in alternate years. Economics 4 will be given in 1916–1917.

Prerequisite—Economics 1. *Three exercises per week. 2d S.*

5. Labor Problems.

A study of such subjects as labor organizations; strikes and lockouts; the open and closed shop; minimum wage; arbitration; workmen's

compensation; labor legislation. Elective for Arts and Science Juniors and Seniors and Agricultural Seniors.

Economics 5 and 7 are given in alternate years. Economics 5 will be offered in 1916–1917.

Prerequisite—Economics 1. *Three exercises per week. 1st S.*

6. Public Finance and Taxation.

A study of public revenues and expenditures with special attention to problems of taxation. Elective for Arts and Science Juniors and Seniors, Agricultural Seniors, and Mechanical and Electrical Engineering Seniors.

Economics 4 and 6 are given in alternate years. Economics 6 will be given in 1915–1916.

Prerequisite—Economics 1. *Three exercises per week. 2d S.*

7. Socialism.

A study of historical types of socialism; the economic theories of Karl Marx; the causes which lie back of the present socialist movement, together with its aims and propaganda. Elective for Arts and Science Juniors and Seniors and Agricultural Seniors.

Economics 5 and 7 are given in alternate years. Economics 7 will be offered in 1915–1916.

Prerequisite—Economics 1. *Three exercises per week. 1st S.*

8. Agricultural Economics.

A consideration of the three factors of production, land, labor and capital, as related to agriculture. Among other rural problems studied will be shifts in population, the income of the farmer, markets, speculation, co-operation, and rural credit. Required of Agricultural Seniors. Elective for Arts and Science Juniors and Seniors.

Prerequisite—Economics 1. *Three exercises per week. 2d S.*

9. Corporation Finance.

A study of the methods used to finance corporations; the various types of stocks and bonds; stock exchanges; underwriting; government regulation of corporations. Elective for Arts and Science Juniors and Seniors and Agricultural Seniors.

Prerequisite—Economics 1. *Three exercises per week. 1st S.*

11. Economic Problems of the Home.

Among the subjects studied will be the following: the effect of modern industry upon industry of the home; economic and legal position of woman in the family and in society; marketing problems. For Junior and Senior women.

Two exercises per week. 1st S.

EDUCATION.

PROF. .....

1. History of Education.

History of education with special attention given to the work of the modern educational reformers. Sophomore subject.

Three exercises per week. 1st S.

2. School Hygiene.

The hygienic aspects of school architecture and equipment; the hygiene of posture, exercise and fatigue, and of reading and writing; the application of hygienic principles to the problems of school administration with special attention to the rural school. Sophomore subject. *Three exercises per week. 2d S.*

3. Class Management.

General conduct of classes; art of questioning; oral and written tests; systems of marking; observation of classes. Senior subject.

Three exercises per week. 1st S.

4. School Administration and Supervision.

The problems and theory of school administration and supervision, with special attention to the rural school. Junior subject.

Three exercises per week. 2d S.

6. History and Theory of Industrial Education.

The development and present status of industrial education and the educational theory underlying it. Senior subject.

Prerequisite—Education 1. *Three exercises per week. 2d S.*

ELECTRICAL ENGINEERING.

PROF. HEWITT, ASST. PROF. HITCHCOCK.

1. Dynamo Electric Machinery. Prof. Hewitt.

This course includes a general study of the various electrical quantities such as electromotive force, current, resistance, permeability of iron; the use of standard measuring instruments; direct and alternating current dynamos and motors including elementary theory. A large number of practical problems illustrate the applications of the above. One exercise per week is devoted to laboratory experiments illustrating the practical application of theory. For Electrical and Mechanical Juniors.

Prerequisites—Physics 52 and Mathematics 56.

Four exercises per week. 1st S.

2. Dynamo Electric Machinery. Prof. Hitchcock.

A continuation of Course 1. A study of electrical measuring instruments, cells, batteries, electrolysis, electroplating, electrotyping, the elements of photometry and electric illumination, inductance, capacity, and elementary alternating currents. One exercise per week is devoted to laboratory experiments illustrating the practical application of theory. For Electrical and Mechanical Juniors.

Prerequisite—Electrical Engineering 1. Four exercises per week. 2d S.

3. Telegraph and Telephone. Prof. Hitchcock.

A study of the acoustic and electrical principles of telephony, transmitting and receiving apparatus, magneto and common-battery switchboards and accessories, selective party-line systems, intercommunicating systems, overhead and underground construction, phantom, simplex, and composite circuits, transpositions, etc. The principles of telegraphy, sounders, repeaters, etc. Wireless telegraphy and telephony. Automatic devices, electric signaling for purposes of alarms, railroads, etc. Elective. *One exercise per week. 1st S.*

6. Application of Electricity to Agriculture. Prof. Hewitt.

Arranged for and adapted to students taking agriculture. The course consists of a general study of the electric dynamo and motor, method of connecting same to the supply circuit and the care and operation of each; a general study of simple problems in transmission, methods of wiring for electric power and lighting; the telephone including the general principles upon which it operates and different systems of installation; electric bell wiring and signaling apparatus; simple water power developments and equipments; electrical utensils for domestic use, etc. This course consists of two lectures and one laboratory period per week. Elective. *Three exercises per week. 2d S.*

7. History of Electrical Engineering. Prof. Hewitt.

A series of lectures giving a brief history of electrical engineering and outlining some of the advantages of this profession. This series of lectures has been planned in order to help a student in the choice of his course after his Freshman year. Elective without credit. For Electrical and Mechanical Freshmen.

One exercise per week. Last half 1st S.

9. Industrial Electricity. Prof. Hewitt, Prof. Hitchcock.

Arranged for and adapted to students taking the Mechanic Arts Course. Open only to Seniors in the Mechanic Arts Course.

Three exercises per week. 1st S.

11. **Electrical Engineering Practice.** Prof. Hitchcock.

A study of the properties of periodic curves, the effects of inductance and capacity, the use of complex quantities, and a more detailed study of generators, motors, transformers, converters, and other electrical apparatus. For Electrical Seniors.

Prerequisite—Electrical Engineering 2. Four exercises per week. 1st S.

12. **Electrical Engineering Practice.** Prof. Hewitt.

A continuation and completion of Course 11. Hydro-electric developments including the design of reinforced concrete dams and power houses and the general subject of water-power engineering; high tension power transmission; design of transmission lines and distributing systems; selection of apparatus for generating stations and distributing systems; lightning protection. For Electrical and Mechanical Seniors.

Prerequisite—Electrical Engineering 11.

Four exercises per week. 2d S.

14. **Electric Railways.** Prof. Hitchcock.

The practicability of construction from an economic standpoint; determination of the size, type, and seating capacity of cars; track location; train schedules; methods of control; train resistance; speed-time and current-time curves; selection of motors; the feeder system; electrolysis; power station and substation location; storage batteries; electric track switches; etc. Illustrated by problems. For Electrical Seniors. *Two exercises per week. 2d S.*

15. **Electrical Laboratory.** Prof. Hewitt, Prof. Hitchcock.

An advanced series of experiments. A written report will be required for which one additional credit hour will be given. For Electrical Seniors. *Three exercises per week. 1st S.*

16. **Electrical Laboratory.** Prof. Hewitt, Prof. Hitchcock.

A continuation of Course 15, with experiments of a more advanced nature. A written report will be required for which one additional credit hour will be given. For Electrical Seniors.

Three exercises per week. 2d S.

18. **Thesis.** Prof. Hewitt, Prof. Hitchcock.

A deposit of fifteen dollars to cover any damage done to instruments, apparatus, etc., is required in this course. Any unexpended balance is refunded at the close of the college year. Where apparatus is constructed as a part of a thesis, it shall remain the property of the department. Optional with head of department. For Electrical Seniors.

Three exercises per week. 2d S.

21. Industrial Electricity. Prof. Hewitt.

A careful study of the principles and methods employed in electrical measurements; resistance of wire and batteries; current measurement by ammeters and electrolysis; the use of electrical measuring instruments; a series of laboratory experiments specially arranged to meet the requirements of chemical engineers. A brief study will be made of the dynamo, motor, transformer, primary and secondary batteries, arc and incandescent lamps and the general principles of electrical distribution. Experiments in electrolysis, electrical furnaces, reduction of metals, etc., are provided. For Chemical Seniors.

Three exercises per week. 1st S.

22. Industrial Electricity. Prof. Hewitt.

A continuation of Course 21, but more advanced in nature. For Chemical Seniors.

Prerequisite—Electrical Engineering 21.

Three exercises per week. 2d S.

24. Design of Electrical Machinery. Prof. Hitchcock.

A study of the design of the more important electrical machines, including the calculation of the dimensions of the machine, both electrical and mechanical, and the predetermination of its performance from the dimensions. For Electrical Seniors.

Prerequisite—Electrical Engineering 11. Two exercises per week. 2d S.

26. Illuminating Engineering. Prof. Hitchcock.

A theoretical discussion of the principles of illumination and the application of these principles to concrete examples. For Electrical Seniors who do not take Electrical Engineering 18. Elective for other Electrical Seniors. *Two exercises per week. 2d S.*

27. Contractors and Specifications. Prof. Hewitt.

The laws and forms of engineering contracts; standard specifications for materials of construction and apparatus. Elective for Mechanical and Electrical Seniors. *One exercise per week. 1st S.*

ENGLISH.

PROF. RICHARDS, PROF. SCOTT, ASST. PROF. SCUDDER, MISS STANLEY.

51. English Composition and Rhetoric. Prof. Scudder.

The purpose of this course is to assist the student in learning how to express his ideas in clear, correct English. Material for daily and weekly themes is taken from the actual college life of the individual student, from current events of public interest, and from the student's outside

reading. Eight exercises are devoted to library practice under the direction of the college librarian. For all Freshmen.

Three exercises per week. 1st S.

52. **English Composition and Rhetoric.** Prof. Scudder.

A continuation of English 51.

Prerequisite—English 51. *Three exercises per week. 2d S.*

53. **Advanced Composition and Literary Criticism.** Prof. Richards.

This is a course in practical English composition, in which the various forms of writing such as newspaper reporting, book reviewing, business letters, the essay and the short story, are studied.

To supplement these exercises the student is required to read and criticize intelligently the writings of at least one noted prose writer and one poet, embodying the results of such study in a carefully prepared essay at the close of the semester. For Mechanic Arts Sophomores. Elective for Arts and Science Sophomores and Juniors.

Prerequisites —English 51 and 52. *Three exercises per week. 1st S.*

54. **Introduction to English Literature.** Prof. Richards.

This course is designed to give a general survey of English literature from the ninth to the nineteenth century. To one who intends to teach English it is of fundamental importance. Lectures, recitations and outside reading constitute the work of the semester. Elective for Freshmen, Sophomores and Juniors. *Three exercises per week. 2d S.*

*55. **The English Novel.** Prof. Richards.

The historical development of the English novel and the chief characteristics of modern fiction are studied in this course. Lectures, extensive outside reading and occasional dramatic representations of scenes from various novels constitute the work of the semester. Elective for Arts and Science and Mechanic Arts Juniors and Seniors.

Prerequisites—English 51 and 52. *Three exercises per week. 1st S.*

56. **Argumentation and Debating.** Prof. Richards.

This course offers training in the fundamental principles of oral debate and written argumentation, it acquaints the student with the laws of parliamentary procedure, and it introduces him to the rules and customs of state and national legislatures. An essential part of the course —in some respects the most valuable feature—is the practice in formal and extemporary debate, such debates being held at least once a week throughout the semester. For Agricultural Seniors. Elective for other students. *Three exercises per week. 2d S.*

*English 55 and 57 are given in alternate years. English 55 is given in 1915–1916.

***57. Modern English Poetry.** Prof. Richards.

In this course a study is made of the great poems of English literature written between 1790 and 1890. While special attention is given to the poetry of Wordsworth, Tennyson and Browning, considerable outside reading is required in the works of Shelley, Keats, Rossetti, Arnold and other poets of the nineteenth century. Elective for Arts and Science and Mechanic Arts Juniors and Seniors.

Prerequisites—English 51 and 52. Three exercises per week. 1st S.

†58. The English Drama, 1585–1625. Prof. Richards.

Certain plays of Marlowe, Shakespeare, Jonson, Webster, Beaumont and Fletcher will be read and discussed in class. Elective for Arts and Science Juniors and Seniors.

Prerequisites—English 51 and 52. Three exercises per week. 2d S.

59. Chaucer. Prof. Richards.

Lectures upon the life and times of Chaucer will be given, and the *Canterbury Tales* will be read and discussed in class. At the close of the course each student will hand in a thesis embodying the results of independent investigation of Chaucerian literature. Elective for Arts and Science Seniors.

Prerequisites—English 52 and 54. Three exercises per week. 1st S.

60. American Literature. Prof. Scott.

This course consists of lectures and extensive outside reading. For Mechanic Arts Seniors. Elective for Arts and Science and Agricultural Seniors. *Four exercises per week. 2d S.*

†62. Shakespeare's Plays. Prof. Richards.

A study of all of Shakespeare's plays. Recitations and occasional dramatic representations of famous scenes. A large amount of reading required. Elective for Arts and Science Juniors and Seniors.

Prerequisites—English 51 and 52. Three exercises per week. 2d S.

63. Writing for Publication. Prof. Scudder.

A practical course in the preparation of articles for the newspapers and magazines. The student is taught to select the essential and present it tellingly. It is offered for all those whose vocation will demand frequent writing for publication, and as a preparation in part for those who intend to take up newspaper work after graduation. This is not a

* English 55 and 57 are given in alternate years. English 55 is given in 1915–1916.

† English 58 and 62 are given in alternate years. English 58 is offered in 1915–1916.

course covering the entire field of journalism, but the student will be instructed in the duties of a reporter and be given constant practice in writing news stories. Elective for Sophomores and Juniors who have no conditions in the English of Freshman year.

Three exercises per week. 1st S.

64. A Continuation of English 63.

Three exercises per week. 2d S.

ENTOMOLOGY.

PROF. O'KANE, MR. CLEVELAND.

1. Principles of Economic Entomology.

The relation of the structure and classification of insects to methods of insect control. The preparation and application of insecticides. Spray machinery and appliances. For Agricultural Juniors. Elective for Arts and Science Sophomores, Juniors and Seniors.

Three exercises per week. 1st S.

2. Applied Economic Entomology.

The application of methods of insect control to typical injurious species. Studies in the life histories and habits of important insect pests of orchard, garden and field crops. Elective for Agricultural Juniors and for Arts and Science Sophomores, Juniors and Seniors.

Prerequisite—Entomology 1. *Three exercises per week. 2d S.*

3. Insects of Domestic Animals.

The insect enemies of domestic live stock; their life histories, habits and means of control. Adapted especially for students in Animal Husbandry. Elective for Agricultural Seniors and for Arts and Science Juniors and Seniors.

Prerequisite—Entomology 1. *Two exercises per week. 1st S.*

4. Household Insects. Medical Entomology.

The life histories, habits and means of control of insects of the household and of stored products. The relation of insects to disease. Adapted especially for students in Home Economics. Elective for Arts and Science Sophomores, Juniors and Seniors, and for Agricultural Juniors and Seniors. *Two exercises per week. 2d S.*

5. Advanced Economic Entomology.

Detailed studies of problems involved in applied entomology. The literature of economic entomology. Investigational methods. Practice

in arranging projects. Original investigations in the life history and habits of one or more injurious species. Adapted for advanced students. Elective for Agricultural Seniors and for Arts and Science Juniors and Seniors. Open to students only by permission of head of department. Credit and hours to be arranged. *1st. S.*

6. Advanced Economic Entomology.

Continuation of Course 5. *2d S.*

FORESTRY.

PROF. FOSTER.

51. Principles of Forestry.

This course is intended to give the student a general knowledge of forestry; relation to forests of soil, moisture, light and climatic conditions; the important systems of treating woodlands practised in Europe and the United States; the habits of important economic timber trees and the character and uses of these woods; the preparation of forest maps and working plans, including rough estimates of standing timber and the rate of growth of different stands; the artificial regeneration of forests by seeding and planting; forest fires; the forest regions of the United States; the practice of forestry by the government and states. For all Agricultural Juniors except those in the Forestry Course. Elective for other students, except those taking Forestry 55.

Three exercises per week. 1st S.

52. Silviculture.

The establishment of forests through artificial regeneration; value of different species; seed collecting; testing and storage; nursery work; direct seeding; planting; care of plantations; cost of establishing plantations; planting plans. Supplemented by actual nursery and planting work. For Forestry Juniors. Elective for other students.

Three exercises per week. 2d S.

53. Dendrology.

A study of the habits, distribution and characteristics of the native trees and important introduced trees of the Northeastern States, in both summer and winter conditions, and with particular reference to the prominent and constant features which lead to ready identification; and a general study of the important timber trees of the United States, including the structure of their woods. For Forestry and Mechanic Arts Juniors. Elective for other students.

Four exercises per week. 1st S.

54. Forest Mensuration.

Methods of determining the contents and growth of individual trees and of whole forests by different units; use of log rules and the measurement of logs and felled trees; the measurement of standing trees; methods of timber estimating; study of growth in diameter; height, and volume; construction and use of volume and yield tables. This course calls for the use of forest instruments and actual practice in measuring trees and whole stands. For Forestry Juniors. Elective for other students. *Three exercises per week. 2d S.*

55. Silviculture.

A study of the life history of trees; the relation of the different species to light, moisture, soil, temperature and to each other in the forest; reproduction of trees, form and character of stands; the origin and determination of forest types; forest maps; relation of forests to stream-flow; forest descriptions; the improvement of the forest through use and proper treatment; the various systems of cutting and reproducing forests by natural means as practised in Europe and the United States, supplemented by frequent woods practice and demonstrations. For Forestry Juniors. Elective for other students, except those taking Forestry 51. *Five exercises per week. 1st S.*

56. Forest Management.

The economic principles underlying the management of forests; the calculation of present and future values of forest property based on productive power; financial considerations of forest management; taxation of forest land; preparation of working plans in Europe, India, and the United States. Includes collateral reading, writing on forestry subjects and discussions. For Forestry Seniors.

Prerequisites—Forestry 52, 53, 54, 55, 57 and 59.

Four exercises per week. 2d S.

57. Forest Protection.

Consideration of practical measures for the protection of forests from fire, insects, fungous diseases, grazing, trespass, and destructive lumbering; and an examination of the federal and state laws relating to forest interests. For Forestry Seniors.

Prerequisites—Forestry 52, 53, 54, and 55.

Two exercises per week. 1st S.

58. Advanced Forestry.

Elective for Forestry Seniors.

Prerequisites—Forestry 52, 53, 54, 55, 57, and 59.

Three exercises per week. 2d S.

59. Practice of Forestry.

Development and present status of forestry in different countries; the work of the federal government oand its management of the national forests; state forest policies; the lumber industry in the United States; the application of forestry to different regions. For Forestry Seniors.

Prerequisites—Forestry 52, 53, 54, and 55.

Three exercises per week. 1st S.

60. Forest Utilization.

Advanced elective course for Mechanic Arts Juniors or Seniors. Work to be arranged to meet the needs of individual students.

Prerequisite—Forestry 53. *Three exercises per week. 2d S.*

61. Advanced Forestry.

Work to be arranged according to the needs of individual students. Elective for Forestry Seniors.

Prerequisites—Forestry 52, 53, 54, and 55.

Three exercises per week. 1st S.

FRENCH.

PROF. WHORISKEY, ASST. PROF. WHITMAN.

1. Elementary French. Prof. Whitman.

Elements of French Grammar. Reading of simple stories; conversation and dictation. Elective for Arts and Science students.

Three exercises per week. 1st S.

2. A continuation of French 1.

Elective for Arts and Science students.

Three exercises per week. 2d S.

3. French Prose. Prof. Whitman.

Reading and translation; composition. Elective for Arts and Science Sophomores. Freshmen who have offered French for admission are allowed to take French 3 and 4.

Prerequisite—French 2. *Three exercises per week. 1st S.*

4. A continuation of French 3.

Prerequisite—French 3. *Three exercises per week. 2d S.*

***5. French Literature of the Nineteenth Century.** Prof. Whitman.

Selections from Hugo, Balzac, Sand, Dumas père, Daudet, Gautier. Composition. Elective for Arts and Science students.

Prerequisite—French 4. *Three exercises per week. 1st S.*

*French 7 and 8 are to be given in 1915–1916 and in alternate years with French 5 and 6.

***6. A continuation of French 5.**

Elective for Arts and Science students.

Prerequisite—French 5. *Three exercises per week. 2d S.*

***7. French Literature of the Seventeenth Century.** Prof. Whitman.

Corneille; Racine; Molière; Bossuet; Boileau; Mme. de Sévigné; La Fontaine. Composition. Elective for Arts and Science students.

Prerequisite—French 4. *Three exercises per week. 1st S.*

***8. A continuation of French 7.**

Elective for Arts and Science students.

Prerequisite—French 7. *Three exercises per week. 2d S.*

GEOLOGY.

PROF. JACKSON, PROF. JAMES.

51. Elementary Geology.

The elements of geology. Special attention is given to local geology and excursions are made to various points of interest in the vicinity. For Agricultural Juniors. Elective for Mechanic Arts Juniors and Arts and Science Juniors and Seniors.

Three exercises per week. 1st S.

52. Historical Geology.

The development of the continents of the earth and the evolution and distribution of the animal and plant forms from the earliest times to the present. Recitations, lectures and laboratory work. Elective for Agricultural and Arts and Science Seniors.

Prerequisites—Zoölogy 51 and Geology 51.

Three exercises per week. 2d S.

54. Mineralogy.

A short course in blowpipe analysis, followed by laboratory practice in the determination and study of minerals, with special reference to their economic value. For Chemical Sophomores and Juniors. Elective for Agricultural and Arts and Science Juniors.

Prerequisites—Chemistry 51 and 52. *Two exercises per week. 2d S.*

* French 7 and 8 are to be given in 1915–1916 and in alternate years with French 5 and 6.

GERMAN.

PROF. WHORISKEY, ASST. PROF. WHITMAN.

1. Elementary German. Prof. Whoriskey, Prof. Whitman.

Elements of German grammar. Reading of simple stories; conversation; singing of German folk-songs. For Agricultural and Chemical Engineering Freshmen who have not offered German for admission. Elective for others. *Three exercises per week. 1st S.*

2. Elementary German.

A continuation of German 1. For Agricultural and Chemical Engineering Freshmen who have not offered German for admission. Elective for others. *Three exercises per week. 2d S.*

3. German Prose. Prof. Whoriskey.

Reading and translation. For Chemical Engineering Sophomores. Elective for others. Freshmen who have offered German for admission are allowed to take German 3 and 4. *Three exercises per week. 1st S.*

4. German Prose.

A continuation of German 3. Scientific German for Chemical Engineering Sophomores. Elective for others.
Prerequisite—German 3. *Three exercises per week. 2d S.*

***5. Goethe.** Prof. Whoriskey.

His life and works. Elective for Arts and Science students.
Prerequisite—German 4. *Three exercises per week. 1st S.*

***6. Goethe.**

A continuation of German 5. Elective for Arts and Science students.
Prerequisite—German 5. *Three exercises per week. 2d S.*

***7. Schiller.** Prof. Whoriskey.

His life and works. Elective for Arts and Science students.
Prerequisite—German 4. *Three exercises per week. 1st S.*

***8. Schiller.**

A continuation of German 7. Elective for Arts and Science students.
Prerequisite—German 7. *Three exercises per week. 2d S.*

†9. German Composition and Conversation. Prof. Whoriskey.

Elective for Arts and Science students.
Three exercises per week. 1st S.

* German 7 and 8 are to be given in 1915–1916. German 13 and 14 are to be given in 1916–1917, and German 5 and 6 are to be given in 1917–1918.

† German 11 and 12 are to be given in 1915–1916 and in alternate years with German 9 and 10.

***10. A continuation of German 9.** *Three exercises per week. 2d S.*

***11. German Composition and Conversation.** Prof. Whoriskey.
Elective. *Three exercises per week. 1st S.*

***12. A continuation of German 11.**
Elective. *Three exercises per week. 2d S.*

†13. Sudermann. Prof. Whoriskey.
His life and principal works. Elective for Arts and Science students.
Prerequisite—German 4. *Three exercises per week. 1st S.*

†14. Sudermann and His Contemporaries.
A continuation of German 13.
Prerequisite—German 13. *Three exercises per week. 2d S.*

HISTORY.

PROF. SCOTT, PROF. SMITH.

In the courses in history an important place is given to historical reading carried on in the reference room. In some cases a considerable part of the work is written.

1. History of Europe from 476 to 1492.
Recitations and collateral reading. Elective for Arts and Science Freshmen and Mechanic Arts Juniors. *Three exercises per week. 1st S.*

2. History of Europe from 1492 to 1715.
Recitations and collateral reading. Elective for Arts and Science and Mechanic Arts Freshmen. *Three exercises per week. 2d S.*

3. History of Europe from 1715 to 1815.
Recitations and collateral reading. Elective for Arts and Science Sophomores.
Prerequisite—History 1. *Three exercises per week. 1st S.*

4. History of Europe since 1815.
Recitations and collateral reading. Elective for Arts and Science Sophomores.
Prerequisite—History 2 or History 3. *Three exercises per week. 2d S.*

* German 11 and 12 are to be given in 1915–1916 and in alternate years with German 9 and 10.

† German 7 and 8 are to be given in 1915–1916. German 13 and 14 are to be given in 1916–1917 and German 5 and 6 are to be given in 1917–1918.

5. American History to 1801.

Elective for Arts and Science Juniors.

Three exercises per week. 1st S.

6. Political and Constitutional History of the United States from 1801 to 1861.

Elective for Arts and Science Juniors and Mechanic Arts Juniors and Seniors. *Three exercises per week. 2d S.*

7. Political and Constitutional History of the United States since 1860.

Elective for Arts and Science and Mechanic Arts Seniors.

Three exercises per week. 1st S.

HOME ECONOMICS.

PROF. THOMPSON.

1. Personal Hygiene.

A study of the laws of health and the means of preserving and improving the physical development and efficiency of the individual, together with lectures and discussions upon right living, the control of the physical and mental environment, individual responsibility for race progress, economic and ethical aspects of hygiene. Required of all women Freshmen. *One exercise per week. 1st S.*

2. Household Methods and Management.

Lectures and discussions on household equipment for heating, lighting, and ventilating, drainage and plumbing, sanitary and economical methods of work, labor saving devices, domestic laundering, table service, marketing and cost accounting, plans for parties and entertainment of guests, social forms and usages. For Home Economics Freshmen. *Three exercises per week. 2d S.*

3. Food Economics.

The study of food products in their marketable and manufactured forms; factors affecting cost of food materials; cost of food preparation and kitchen equipment. In the laboratory accompanying this course emphasis is placed upon neatness and accuracy in work and exact systems of weights and measures are taught. For Home Economics Freshmen. *Three exercises per week. 1st S.*

5. Clothing.

The clothing textiles are studied as to their structure, properties, and economic and hygienic values; study of clothing manufacture. Practice is given in selection, care and repair of clothing, and in garment making. Elective or may be offered for Course 3 by Home Economics Freshmen. *Three exercises per week. 1st S.*

7. Foods.

This course takes up the chemical composition and nutritive value of foods. The foodstuffs are considered in regard to their digestibility, their available nutrients, and the changes effected by the application of heat. Laboratory practice in the chemistry and cookery of foods. For Home Economics Sophomores.

Prerequisite—Chemistry 55. *Three exercises per week. 1st S.*

8. Foods.

A continuation of Course 7, together with discussions of dietaries and serving of meals. For Home Economics Sophomores.

Prerequisite—Course 7. *Four exercises per week. 2d S.*

11. Nutrition.

A detailed study of the digestive processes with special attention to the action of enzymes and hormones. The organic foodstuffs are discussed with regard to their chemical structure, the products obtained by their hydrolytic cleavage, and their specific dynamic action in the body. Other topics taken up are: protein metabolism and the protein requirement; the fuel value of food and the energy requirement of the body; influence of food consumption upon metabolism; quantitative relation between work performed and total metabolism; methods of investigation employed in the study of nutrition; comparisons of feeding and fasting experiments; the inorganic foodstuffs and the function of the individual ash constituents of the diet; food habits and dietary standards; food economy. For Home Economics Juniors.

Prerequisites—Chemistry 57, Home Economics 7 and 8, Zoölogy 57.
Three exercises per week. 1st S.

12. Dietetics.

Problems in dietary calculations; standard portions of food materials; application of the principles of human nutrition in the adaptation of diet to varying physiological, economic and social conditions; nutritional diseases and abnormalities; food therapy. For Home Economics Juniors.

Prerequisites—Home Economics 11. *Three exercises per week. 2d S.*

13. Home Decoration and House Furnishings.

Wall and floor finishes; selection of home furnishings; space and color values; estimations of costs and comparisons of sanitary and artistic furnishings; study of ancient and modern handcrafts, art needle work, color and design in furnishing fabrics. For Home Economics Juniors.

Prerequisites—Drawing 55 and 68. *Three exercises per week. 1st S.*

15. Textiles.

Microscopic and chemical study of fabrics and fibres used in textile manufacture; modern processes of dyeing, spinning and weaving. Elective for Juniors.

Prerequisites—Chemistry 55, 56, and 57.

Three exercises per week. 1st S.

16. Sanitation and Health.

A study of building sites and surroundings; water supply and house drainage; heating, lighting and ventilation; food preservation and storage; laws of municipal sanitation; methods of investigating and regulating public health; care of the sick and convalescent; treatment of injuries and emergencies; hygiene of infectious diseases; use of antiseptics and disinfectants. For Home Economics Juniors.

Prerequisites—Chemistry 55 and 56, and Botany 55.

Three exercises per week. 2d S.

18. History of Costume.

Comparison of primitive and historic costumes with modern dress; study of designs and conventions of national modes. Elective for Juniors. *Two exercises per week. 2d S.*

19. Home Administration.

Organization of the household; standards of living; operating expenses; apportionment of income; estimation of budgets; elective expenditures; domestic service; coöperative housekeeping; social responsibilities. For Home Economics Seniors.

Two exercises per week. 1st S.

20. Humanics.

Human phylogenesis; influence of heredity upon natural tendencies and biologic efficiency of the individual; development through infancy, childhood and adolescence; sex education; social hygiene. For Home Economics Seniors.

Prerequisite—Senior standing. *Two exercises per week. 2d S.*

21. Seminar.

Research problem in nutrition, food chemistry, experimental cookery, household economics or textiles. Elective for Home Economics Seniors. *Three exercises per week. 1st S.*

22. Seminar.

Investigation in problem assigned in Course 21. Elective for Home Economics Seniors. *Three exercises per week. 2d S.*

23. Teaching of Domestic Art.

This course considers the arrangement and presentation of domestic art in the elementary and secondary schools; outlines of lessons; development of courses; selection of equipment. Elective for Seniors who have elected textiles and clothing. *Three exercises per week. 1st S.*

24. Teaching of Domestic Science.

Course in teaching domestic science similar to Course 23. Elective for Home Economics Seniors. *Three exercises per week. 2d S.*

HORTICULTURE.

PROF. GOURLEY, ASST. PROF. WOLFF, MR. SCHERRER.

52. Vegetable Gardening.

This course is designed to give a working knowledge of the various phases of vegetable production. It includes a study of garden soils, germination and planting of seeds, selection of varieties with reference to the conditions of the state, construction and management of hot beds and cold frames, fertilizing, irrigation, and packing and marketing of vegetables. For Agricultural Sophomores.

Three exercises per week. 2d S.

53. Greenhouse Construction and Management.

Lectures, recitations and laboratory work. This course aims to familiarize the student with modern methods of greenhouse work and the more important plants grown under glass. Sorts, varieties, culture, marketing, and enemies of greenhouse plants are studied. Each student is required to do practical work in propagating, potting, watering, and ventilating. A study is made of the history and development of different types of greenhouses, including methods of heating and general management. Required in Horticultural Course, Junior year. Elective in other Agricultural Courses. *Three exercises per week. 1st S.*

54. Practical Pomology.

A study of the fundamental problems of fruit growing, such as location, choice of site, kind and adaptability of soil for fruit growing, soil management, planting of orchards, pruning, sprays and spraying, thinning, harvesting and marketing. Lectures and laboratory work. For Agricultural Sophomores. *Three exercises per week. 2d S.*

NOTE.—The college has several hundred fruit trees which are available for the students in studying orchard operations. All types of spray machinery from the knapsack to the power sprayer are used in class work.

55. Systematic Pomology and Commercial Orcharding.

The first eight weeks of the semester are devoted to a study of the leading varieties of fruits and their adaptations, with special reference to New England conditions. During the remainder of the semester this course deals with the management of commercial orchards, problems of marketing, packing, transportation and coöperation. Special study is given to the experimental data on maintaining soil fertility in the orchard and on other fundamental factors in orchard management. In the laboratory special instruction is given to the packing of apples for market and judging fruit. Lectures, reference reading and laboratory work. Required in Horticultural Course, Senior year.

Four exercises per week. 1st S.

56. Landscape Gardening.

A study of the principles involved in ornamental and landscape gardening. Special attention is given to the beautifying of home surroundings. Laboratory work consists in landscape design and practice in laying out and planting home and public grounds. Required in Horticultural Course, Junior year. Elective in other Agricultural Courses. *Three exercises per week. 2d S.*

57. Evolution and Improvement of Plants.

The applications of the principles of evolution to the improvement of plants. Variation, selection and heredity as applied to the problems of plant breeding in agricultural practice. Required in Horticultural and General Agricultural Courses, Senior year. Elective in other Agricultural Courses.

Prerequisites—Botany 51 and 52. Two exercises per week. 1st S.

58. Nursery Management.

A study of the methods of propagation and the care of trees, shrubs and perennial plants in the nursery. Lectures, reference readings and practice. Required in Horticultural Course, Junior year. Elective in other Agricultural Courses. *Three exercises per week. 2d S.*

60. Floriculture.

A special study of the classification, history and development of the flowers and plants grown commercially and about the home, together with instruction and practice in their propagation and culture. Required in Horticultural Course, Junior year. Elective for others.

Prerequisites—Botany 51 and 52. Two exercises per week. 2d S.

61. Commercial Floriculture.

A study of the growing of cut flowers and decorative plants. Lectures and practical exercises in the greenhouse. Elective for Agricultural Seniors.

Prerequisite—Horticulture 60. Three exercises per week. 1st S.

62. Horticultural Seminar.

A review of the important horticultural literature and methods of investigational work. Required in Horticultural Course, Senior Year Elective in other Agricultural Courses. *One exercise per week. 2d S.*

65. Advanced Horticulture.

Special work in horticulture. May be taken by special arrangement with the head of the department. Prerequisites will depend on the work taken. Elective for Horticultural and General Agricultural Seniors.

Two to five exercises per week. Time to be arranged. 1st S.

66. Advanced Horticulture.

A continuation of Course 65. Special arrangement must be made with the head of the department for this work. Elective for Horticultural and General Agricultural Seniors. Time and credit to be arranged.

Two to five exercises per week. 2d S.

68. Vegetable Forcing.

A course dealing with a study of special vegetables as grown under glass. Emphasis is placed upon the commercial phases of the work, including varieties, culture, style of packages, and marketing. Each student is required to grow crops from seeding to maturity. In addition, a study of systematic olericulture is given. For Horticultural Juniors. Elective in other Agricultural Courses.

Three exercises per week. 2d S.

70. Vegetable Forcing.

A continuation of Horticulture 68. Elective for Horticultural and General Agricultural Seniors.

Prerequisite—Horticulture 52 and 68. Two exercises per week. 2d S.

LATIN.

PROF. WHORISKEY, ASST. PROF. WHITMAN.

1. Livy (Book I). Prof. Whitman.

Elective for Arts and Science students who have offered Advanced Latin for entrance. *Three exercises per week. 1st S.*

2. Horace (Odes and Epodes).

Prerequisite—Latin 1. Three exercises per week. 2d S.

***3. Terence (Andria and Phormio).**

Elective for Arts and Science students.

Prerequisite—Latin 2. Three exercises per week. 1st S.

*Not to be given in 1915–1916.

***4. Tacitus (Annals).**

Elective for Arts and Science students.

Prerequisite—Latin 3. *Three exercises per week. 2d S.*

MATHEMATICS.

PROF. PETTEE, ASSOC. PROF. MOORE, ASST. PROF. STECK.

51a. Algebra and Trigonometry. Prof. Moore, Prof. Steck.

The first half of the semester is devoted to a brief review of fundamental principles, a more advanced presentation of linear and quadratic equations, followed by an introduction to the theory of equations, determinants, variation and logarithms. The second half of the semester is given to trigonometry. For Agricultural and Mechanic Arts Freshmen. Elective for Arts and Science Freshmen.†

Four exercises per week. 1st S.

51b. Trigonometry and Analytic Geometry. Prof. Moore, Prof. Steck.

The first ten weeks of this course is devoted to plane and spherical trigonometry. During the remainder of the semester the student begins a study of the elements of plane analytic geometry. For Engineering Freshmen. Elective for Arts and Science Freshmen.†

Four exercises per week. 1st S.

52. Analytic Geometry. Prof. Moore, Prof. Steck.

This course, a continuation of Mathematics 51b, combines with analytic geometry a number of topics traditionally treated in college algebra that depend on or are closely associated with geometric representation. It presents the elements of both plane and solid analytic geometry. Cartesian and polar coördinates, the straight line, circle, and the conic sections; the derivative and its elementary applications; methods of analysis as illustrated by loci problems. For Engineering Freshmen. Elective for Arts and Science Freshmen.

Prerequisite—Mathematics 51b. *Four exercises per week. 2d S.*

53. Solid Geometry. Prof. Moore.

The elements of solid and spherical geometry including original demonstrations and the solution of numerical problems. For Engineering and Mechanic Arts Freshmen. Elective for Agricultural and Arts and Science Freshmen. *Two exercises per week. 1st S.*

54. Surveying. Prof. Pettee, Prof. Moore, Prof. Steck.

Lectures, recitations, field work and plotting; surveying with chain, compass, transit, sextant and plane table; special attention to adjust-

* Not to be given in 1915–1916.

† Arts and Science students who intend to take up the study of Analytic Geometry should elect Mathematics 51a and not Mathematics 51b.

ments, care and proper methods of using these instruments; the methods of determining areas; the use of the solar transit for the determination of the true meridian; levelling for profiles and contours; computing from field notes taken in connection with the course. For Agricultural and Mechanic Arts Freshmen. Elective for Arts and Science Freshmen.

Two exercises per week, throughout the semester. 2d S.

55. Calculus. Prof. Moore, Prof. Steck.

Differentiation of algebraic and transcendental functions with applications to physical and allied problems. The simple methods of integration. For Engineering Sophomores. Elective for Arts and Science Sophomores.

Prerequisite—Mathematics 52. *Five exercises per week. 1st S.*

56. Calculus. Prof. Moore, Prof. Steck.

A continuation of Course 55, including the determination of length, area, volume, mass, mean density, center of gravity, etc., by the methods of the integral calculus.

Prerequisite—Mathematics 55. *Three exercises per week. 2d S.*

57. Differential Equations. Prof. Steck.

An elementary course devoted to the study of ordinary differential equations, especially those of the first and second orders, with applications to geometry, physics, and mechanics. Offered in alternate years. Given in 1915–1916.

Prerequisite—Mathematics 56. *Two exercises per week. 1st S.*

58. Advanced Calculus. Prof. Steck.

A study of some of the more advanced topics of differential and integral calculus with applications to the solution of problems. Elective for Juniors and Seniors who have completed Mathematics 56. Offered in alternate years. Given in 1916–1917.

Two exercises per week. 2d S.

59. Theory of Equations. Prof. Moore.

This course comprises the general properties of polynomials and equations, the relation between the roots and coefficients with applications to the symmetric functions of the roots, the transformation of equations, the solution of cubic, biquadratic, binomial, and reciprocal equations, the properties of the derived functions, the limits and the separation of the roots, and the solution of higher numerical and transcendental equations. Offered in alternate years to Juniors and Seniors who have completed Mathematics 56. Given in 1916–1917.

Two exercises per week. 1st S.

60. History of Mathematical Science. Prof. Moore.

A course designed to acquaint those who intend to teach mathematics with the development of algebra, geometry, trigonometry, analysis and calculus. Lectures, assigned readings and recitations. Offered in alternate years. Given in 1915–1916.

Prerequisite—Mathematics 56. *Two exercises per week. 2d S.*

62. Astronomy. Prof. Pettee.

A short culture course designed to give the student a simple explanation of the many phenomena constantly exhibiting themselves in the universe and to acquaint him with the present state of astronomic science. Elective for Arts and Science Juniors and Seniors.

Two exercises per week. 2d S.

NOTE.—Students desiring to take Courses 57, 58, 59, or 60 should consult with the instructor before registering.

MECHANICAL ENGINEERING.

PROF. CHANLDER, ASST. PROF. MCKONE.

51. History of Mechanical Engineering. Prof. Chandler.

A brief history of the development of the steam engine and other important mechanical inventions. For Electrical and Mechanical Freshmen. Elective without credit.

One exercise per week, last half of semester. 1st S.

52. Theoretical Mechanics. Prof. McKone.

Composition and resolution of forces, conditions of equilibrium, center of gravity with especial attention to plane surfaces, friction, the simple machines, laws of motion, constrained motion, impact, work and energy, moment of inertia, particularly of plane surfaces. For Electrical and Mechanical Sophomores. Mathematics 56 is required as a parallel course. *Three exercises per week. 2d S.*

53. Strength of Materials. Prof. Chandler.

Stresses, strength of riveted joints, strength and deflection of beams, strength of columns, springs, etc. For Electrical and Mechanical Juniors.

Prerequisite—Mechanical Engineering 52.

Three exercises per week. 1st S.

54. Design of Machine Elements. Prof. Chandler.

The design and proportion of machine parts, such as beams, shafts, gears, belts, springs, fastenings, etc. For Electrical and Mechanical Juniors.

Prerequisite—Mechanical Engineering 53.

Three exercises per week. 2d S.

55. Designing and Drawing. Prof. McKone.

The application of Course 53 to practical problems worked out on the drafting board. For Electrical and Mechanical Juniors. Mechanical Engineering 53 is required as a parallel course.

Two exercises per week. 1st S.

56. Designing and Drawing. Prof. McKone.

A continuation of Course 55. For Electrical and Mechanical Juniors. Mechanical Engineering 54 is required as a parallel course.

Two exercises per week. 2d S.

57. Thermodynamics. Prof. Chandler.

A study of the thermodynamic properties of gases and vapors, and the phenomena of operation of thermodynamic engines; analysis of energy losses and methods of minimization; interpretation of indicator and temperature-entropy diagrams; study of steam engines and turbines, boilers, gas engines and producers, and refrigerating machinery. For Electrical and Mechanical Juniors.

Prerequisite—Mathematics 56. *Three exercises per week. 1st S.*

58. Thermodynamics. Prof. Chandler.

A continuation of Course 57. For Electrical and Mechanical Juniors.

Prerequisite—Mechanical Engineering 57.

Three exercises per week. 2d S.

59. Mechanical Laboratory. Prof. Chandler, Prof. McKone.

A study of apparatus and methods of calibration used in engineering investigations; testing the strength of iron, steel, and wood. Tests of steam boilers, steam engines, gas engines, condensers and pumps, valve setting, indicator practice, testing lubricants and fuels. For Electrical and Mechanical Juniors.

Prerequisite—Mechanical Engineering 52.

Two exercises per week. 1st S.

60. Mechanical Laboratory. Prof. Chandler, Prof. McKone.

A study of miscellaneous engineering materials and apparatus, and standard methods of testing; lubricants, cements, fuels, boilers, engines,

pumps, power plant appliances and supplies, etc. For Electrical and Mechanical Juniors.

Prerequisite—Mechanical Engineering 59.

Two exercises per week. 2d S.

61. Hydraulics. Prof. Chandler.

A study of the principles and practice of hydraulic machinery and measurements. For Electrical and Mechanical Seniors.

Prerequisite—Mechanical Engineering 53.

Three exercises per week. 1st S.

63. Materials of Engineering. Prof. McKone.

A study of the properties, commercial forms, methods of preparation and use of engineering materials. For Electrical and Mechanical Seniors.

Two exercises per week. 1st S.

65. Mechanical Laboratory. Prof. Chandler, Prof. McKone.

A critical study and detailed analysis of the performance of engineering apparatus, particularly of steam and gas engines, hydraulic apparatus, etc. For Electrical and Mechanical Seniors.

Prerequisite—Mechanical Engineering 60.

Two exercises per week. 1st S.

66. Mechanical Laboratory. Prof. McKone.

A continuation of Course 65 for Mechanical Seniors.

Prerequisite—Mechanical Engineering 65.

Three exercises per week. 2d S.

67. Advanced Design. Prof. Chandler, Prof. McKone.

Design of steam boilers, steam engines, gas engines, pumps, etc. For Mechanical Seniors. *Three exercises per week. 1st S.*

68. Advanced Design. Prof. Chandler, Prof. McKone.

A continuation of Course 67 for Mechanical Seniors.

Three exercises per week. 2d S.

70. Steam Power Plant Design. Prof. Chandler.

The design of steam power plants, including a study of the proper location, the selection of engines and boilers, piping systems and auxiliary apparatus. For Mechanical Seniors.

Three exercises per week. 2d S.

71. Thermodynamics. Prof. McKone.

A study of the thermodynamic properties of substances and of power plant apparatus. For Chemical Engineering Seniors.

Two exercises per week. 1st S.

72. Manual Training. Prof. Chandler.

A study of the purpose of manual training work, of the proper methods of teaching, and of the equipment of manual training schools. For Mechanic Arts Seniors. *Three exercises per week. 2d S.*

74. Kinematics of Machinery. Prof. McKone.

The study of machine parts with respect to their forms, motions, modes of connection, and methods of manufacture. For Electrical and Mechanical Sophomores and Chemical Seniors.

Prerequisite—Mathematics 51. Two exercises per week. 2d S.

75. Kinematics of Machinery. Prof. McKone.

The application of Machine Design 52 to practical problems worked out in the drafting room. For Electrical and Mechanical Juniors.

Prerequisites—Mathematics 51 and Machine Design 52.

Two exercises per week. 1st S.

76. Kinematics of Steam Machinery. Prof. Chandler.

A continuation of Machine Design 53, including the theory of the slide valve. For Electrical and Mechanical Juniors.

Prerequisites—Mathematics 51 and Machine Design 53.

Two exercises per week. 2d S.

METEOROLOGY.

PROF. PETTEE.

1. Meteorology.

Recitations and lectures on wind systems, precipitation, humidity, laws of storms and tornadoes and methods of prediction of atmospheric changes. For Agricultural Seniors. Elective for Arts and Science students.

Prerequisite—A course in physics. Two exercises per week. 1st S.

*MILITARY SCIENCE AND TACTICS.

LIEUT. SUTHERLAND.

Unless excused by proper authority, all male students are required to complete three years' satisfactory work in drill and two years' satisfactory work in theoretical military science.

Drill.

Drill includes practical instruction in the following subjects: Close and Extended Order Drills by Company and Battalion, Advance and Rear Guards, Outposts, Marches, Ceremonies, Battalion Review, Parades and Guard Mounting, Guard Duty, Calisthenics and Gymnastics, Rifle Practice, First Aid to the Injured.

1. **Military Drill.**
For Freshmen. *Two exercises per week. 1st S.*

2. **Military Drill.**
A continuation of Drill 1. For Freshmen.
Two exercises per week. 2d S.

3. **Military Drill.**
For Sophomores. *Two exercises per week. 1st S.*

4. **Military Drill.**
A continuation of Drill 3. For Sophomores.
Two exercises per week. 2d S.

5. **Military Drill.**
For Juniors. *Two exercises per week. 1st S.*

6. **Military Drill.**
A continuation of Drill 5. For Juniors.
Two exercises per week. 2d S.

7. **Military Drill.**
Elective for Seniors only. *Two exercises per week. 1st S.*

8. **Military Drill.**
A continuation of Drill 7. Elective for Seniors only.
Two exercises per week. 2d S.

* Students who are excused from drill by competent authority are required to take additional work in some subject equivalent in hours to the military work from which they are excused.

Military Science.

Military Science includes theoretical instruction in the principles of the military profession and in the theory of the specific movements taught on the drill ground and in the field, the military policy and history of the United States, the principles of military discipline and the administrative duties of military officers.

1. Infantry Drill Regulations.

Practical instruction and lectures. For Freshmen.
One exercise per week. 1st S

2. Manual of Guard Duty and Small Arms Firing Regulations.

Practical instruction and lectures. For Freshmen.
Prerequisite—Military Science 1. *One exercise per week. 2d S.*

3. Field Service Regulations.

Lectures and discussions covering advance and rear guards, outposts, patrol, etc. For Sophomores.
Prerequisite—Military Science 2. *One exercise per week. 1st S.*

4. Field Service Regulations.

A continuation of Military Science 3. Practical field work. For Sophomores.
Prerequisite—Military Science 3. *One exercise per week. 2d S.*

5. Field Engineering and Hasty Intrenching.

Lectures and practical work. Elective for Juniors.
Prerequisite—Military Science 4, and open only to students who are taking Drill. *One exercise per week. 1st S.*

6. Military Map Reading and Sketching.

Theoretical and practical work. Elective for Juniors.
Prerequisite—Military Science 4, and open only to students who are taking Drill. *One exercise per week. 2d S.*

7. Army Regulations, Organization and Administration.

Lectures and preparation of military papers. Elective for Seniors.
Prerequisite—Military Science 4, and open only to students who are taking Drill. *One exercise per week. 1st S.*

8. Army Regulations, Organization and Administration.

A continuation of Military Science 7. Elective for Seniors.
Prerequisite—Military Science 7, and open only to students who are taking Drill. *One exercise per week. 2d S.*

PHYSICAL CULTURE.

Unless excused by proper authority, all women students are required to complete three years' work in physical culture.

1. Physical Culture.

A course in free-hand calisthenics, Indian club, dumb bell and wand drills, apparatus work and marching adapted to the needs of women students. *One exercise per week. 1st S.*

2. Physical Culture.

A continuation of physical culture 1. *One exercise per week. 2d S.*

PHYSICS.

PROF. FISHER, MR. MORAN.

51. Mechanics and Heat.

Lectures, illustrated by experiments, with notebooks to be handed in at intervals and occasional written quizzes. As little mathematics is used in this course as is consistent with the proper interpretation of the lecture experiments. For Agricultural and Mechanic Arts Sophomores. Elective for Arts and Science students.

Two exercises per week. 1st S.

52. Magnetism and Electricity.

A continuation of Course 51. *Two exercises per week. 2d S.*

53. Physical Theory and Practice.

Students electing Course 53 are advised to take analytics and calculus; the lack of them will prove a hindrance. For Mechanical and Electrical Sophomores. Elective for Arts and Science students.

Six exercises per week. 1st S.

54. Physical Theory and Practice.

A continuation of Course 53.

Prerequisite—53. *Six exercises per week. 2d S.*

55. Mathematical Physics and Practice.

More advanced than 53 and 54. For Chemical Juniors. Elective for Arts and Science students.

Prerequisites—Mathematics 52, 55 and 56.

Six exercises per week. 1st S.

(1915–1916. Four exercises per week. 1st S.)

56. Mathematical Physics and Practice.

A continuation of Course 55.

Prerequisite—55. *Six exercises per week. 2d S.*

(1915–1916. Four exercises per week. 2d S.)

58. Elementary Physics and Practice.

A review of physics of elementary grade, for students who do not desire a mathematical course, but need a study of principles, with laboratory applications. Mathematics 51 and Physics 51 and 52 must precede or accompany this. For Mechanic Arts Sophomores. Elective for Arts and Science students. *Three exercises per week. 2d S.*

59. Elementary Optics and Photographic Instruments.

A course designed for students who wish to use photographic apparatus intelligently. Lectures on fundamental principles of light, images, color and photometry, and on practical lenses and cameras. (Not a course on photographic chemistry, developers, etc.) Stencil notes will be used. Elective for all students, except Freshmen and Two Year Students in the first year. *Two exercises per week. 1st S.*

61. Elementary Laboratory Optics.

A physical laboratory course designed to accompany Physics 59, which must precede or accompany this. Individual experiments, on which reports will be handed in. *Two exercises per week. 1st S.*

NOTE.—The following deposits are required at the beginning of the work of a year or part of a year: 51, 52—75c; 59—50c, for notes, not returnable; 58, 61—$1.00; 53, 54, 55, 56—$2.00, for notes and damage, balance returnable at end of year.

NOTE.—Students desiring to be recommended as High School Physics teachers must pass with grade of 80 in Courses 51, 52, 55, 56, or with grade of 85 in Courses 51, 52, 53, 54.

POLITICAL SCIENCE.

PROF. SCOTT.

2. Laws of Business.

Recitations supplemented by the discussion of cases. Elective for Arts and Science and Mechanic Arts Juniors and Seniors and Agricultural Seniors. *Three exercises per week. 2d S.*

3. American Constitutional Law.

Recitations, supplemented by a study of the decisions of the United States Supreme Court. Special attention is given to the connection between American constitutions and American political history. Elective for Arts and Science and Mechanic Arts Juniors and Seniors and Agricultural Seniors. *Three exercises per week. 1st S.*

PSYCHOLOGY.

PROF. GROVES, PROF. ——.

52. Introduction to Psychology. Prof. Groves.

An introduction to the science of psychology which aims to give the student a systematic knowledge of the structure and functions of the mind. Simple experiments are used to illustrate fundamental laws of the mind and to develop in the student power in introspection. The principles of the science are related as closely as possible to the concrete experiences of the student. A discussion of normal psychology with only incidental attention to abnormal mind states. This course must be elected by all who wish to elect other courses in psychology. Sophomore subject. *Three exercises per week. 2d S.*

53. Educational Psychology. Prof. ———.

This course aims to set forth the scientific basis of teaching in so far as it is found in the science of psychology and to enable the student to investigate educational problems from the point of view of mental development in the child.

The course covers the following ground:

A. A study of the important mental processes that have direct bearing upon the problems of education.

B. A series of experiments with reference to educational principles and teaching problems of a psychological character.

C. Original investigation by the statistical method of concrete educational problems.

D. Study of the recent literature in the field of educational psychology.

Junior subject.

Prerequisite—Psychology 52. *Three exercises per week. 1st S.*

55. Social Psychology. Prof. Groves.

A study of the development and the characteristics of the social mind of man.

The course covers the following ground:

A. The study in detail of the character and operation of the instincts, sentiments and emotions of man of primary importance for his life in society.

B. The study of the operation of the modern social mind, including a discussion of suggestibility, the crowd, mob mind, fashion, conventionality, custom-imitation, social conflict, discussion, public opinion and problems of social control.

Senior subject.

Prerequisite—Psychology 52. *Three exercises per week. 1st S.*

SHOP WORK.

PROF. CHANDLER, MR. PHILBRICK, MR. CAHILL.

51. Wood Work. Mr. Philbrick.

Exercises in carpentry work, joinery and pattern making. For Engineering and Mechanic Arts Freshmen. Elective for Arts and Science Freshmen. *Two exercises per week. 1st S.*

51a. Wood Work. Mr. Philbrick.

Exercises in bench work. For Chemical Freshmen.
One exercise per week. 1st S.

52. Wood Work. Mr. Philbrick.

Wood work arranged to suit the needs of students taking the Mechanic Arts Course. For Mechanic Arts Freshmen.
Prerequisite—Shop 51. *Two exercises per week. 2d S.*

53. Wood Work. Mr. Philbrick.

Exercises in carpenter work, joinery, framing, saw filing and care of carpenter tools. For Agricultural Sophomores.
Two exercises per week. 1st S.

55. Forging. Mr. Cahill.

Exercises in upsetting, drawing, forming, hardening, tempering and welding. For Agricultural Sophomores. *One exercise per week. 1st S.*

57. Forging. Mr. Cahill.

Exercises in upsetting, drawing, forming, hardening, tempering and welding. For Electrical and Mechanical Sophomores.
Two exercises per week. 1st S.

59. Wood Work. Mr. Philbrick.

Wood turning and cabinet making. For Mechanic Arts Sophomores.
Two exercises per week. 1st S.

60. Wood Work. Mr. Philbrick.

A continuation of Course 59. For Mechanic Arts Sophomores.
Three exercises per week. 2d S.

62. Machine Work. Mr. Cahill.

A course in turning, facing, thread cutting, milling, shaping, scraping, filing and planing. For Electrical and Mechanical Sophomores.
Two exercises per week. 2d S.

63. General Machine Work. Mr. Cahill.

A continuation of Course 62. For Electrical and Mechanical Juniors.
Two exercises per week. 1st S.

64. Manufacturing. Mr. Cahill.

Construction and use of jigs and special fixtures; use of limit gauges, special tools, turret and screw machinery; manufacture of some simple machine, using special appliances. For Electrical Juniors. Elective for Mechanical Juniors. *Two exercises per week. 2d S.*

65. Wood Work. Mr. Philbrick.

A study of exercises suitable for a course in manual training. For Mechanic Arts Juniors. *Three exercises per week. 1st S.*

66. Forge Work. Mr. Cahill

For Mechanic Arts Juniors. *Three exercises per week. 2d S.*

68. Machine Work. Mr. Cahill.

Same as Course 62. For Chemical Juniors.
Two exercises per week. 2d S.

69. Advanced Shop Work. Mr. Philbrick.

Foundry practice; pattern making. For Mechanical Seniors.
Two exercises per week. 1st S.

70. Advanced Shop Work. Mr. Cahill.

Tool making. For Mechanical Seniors.
Two exercises per week. 2d S.

71. Machine Work. Mr. Cahill.

Machine work arranged to meet the needs of students taking the Mechanic Arts Course for Teachers. For Mechanic Arts Seniors.
Two exercises per week. 1st S.

72. Machine Work. Mr. Cahill.

A continuation of Shop Work 71. *Three exercises per week. 2d S.*

SOCIOLOGY.

PROF. GROVES.

51. Primitive Man and Social Origins.

An elementary study of life of primitive man, the beginnings of human society and the factors that condition social evolution. The course aims to introduce the student to a field of investigation of special value to the student of the social sciences. Special attention is given to the study of primitive social control. Ethnological readings are required.

The course includes a discussion of the following topics: Geographical basis of human society, origin and antiquity of primitive man, races, race crossing, prehistoric, culture periods, primitive life conditions in-including food, housing, inventions, slavery, art, dress, marriage, family

forms and customs, totemism, tabu, magic, medicine men, ceremonies, secret societies, clan and tribal organization.

Special attention will be given to the theories of human association. Sophomore subject. *Three exercises per week. 1st S.*

52. Social Pathology and Modern Philanthropy.

This course in modern social problems covers the following ground:

A. Study of the nature, origin and proper treatment of dependent, defective and delinquent classes, including an introduction to the theories of criminal anthropology.

B. Study of contemporary social problems and movements for social betterment as reported in *The Survey.*

C. Thesis work on the part of the student based upon first-hand study of some concrete social problem.

Senior subject. Students are advised to complete Sociology 51 before electing this course. *Three exercises per week. 2d S.*

***53. Mental Defectives.**

A sociological study of mental defectiveness with special attention to the problem of social prophylaxis. A course designed for students who plan to engage in social or educational work of an administrative or institutional character or who plan to do graduate work in the field of psychology or sociology.

The course covers the following ground:

A. The study of amentia, including a discussion of the number, causation, pathology, classification, characteristics, problem of diagnosis and prognosis and the treatment of aments.

B. The study of the constitution and function of the psychological clinic, method of classifying clinic cases, the Binet measuring scale, the sociological relations of the clinic.

C. Individual study by the student of typical cases of mental defectiveness by the case method.

D. An introduction to the literature of amentia.

Senior subject.

Prerequisites—Psychology 52 and Sociology 51.

Three exercises per week. 1st S.

54. Rural Sociology.

A study of the social significance, conditions and resources of American country life with the purpose of developing community leadership. The course includes a discussion of the following:

A. Rural ethnology and sociology. Land basis of society, origin of primitive agriculture, animal and plant life as factors in human progress, modern agriculture and population, migration, immigration and city drift.

B. Rural social psychology. Imitation and city influence, suggestibility, conflict, discussion, public opinion and community pride.

C. Rural social pathology. Dependents, defectives and delinquents in their relation to the country community, problem of rural police protection, moral problems of the rural community.

D. Rural progress. Survey making, communication, community advertising, associations and clubs, rural education, wider use of rural school houses, rural school gardens, community competition, fairs, recreation, the rural church and welfare work.

Senior subject.

Prerequisite—Sociology 51, except for Agricultural Seniors.

Three exercises per week. 2d S.

***55. Social Ethics.**

This course in social ethics covers the following ground:

A. Origin and development of moral conceptions in savage society.

B. The study of representative altruistic thought of ethical significance.

C. The investigation by the seminar method of some ethical problem of importance in modern social life. The topic for 1915–1916 will be race prejudice and race friction.

Senior subject.

Prerequisite—Any two courses in sociology.

Three exercises per week. 1st S.

SPANISH.

1. Elementary Spanish. Prof. Whitman.

Elements of Spanish grammar. Reading of simple stories; conversation and dictation. Elective for Arts and Science students.

Three exercises per week. 1st S.

2. A Continuation of Spanish 1.

Prerequisite—Spanish 1. *Three exercises per week. 2d S.*

3. Spanish Prose.

Reading and translation.

Prerequisite—Spanish 2. *Three exercises per week. 1st S.*

4. A Continuation of Spanish 3.

Prerequisite—Spanish 3. *Three exercises per week. 2d S.*

*Sociology 53 and 55 are given in alternate years. Sociology 55 is offered in 1915–1916.

ZOÖLOGY.

PROF. JACKSON, MR. BATCHELDER.

The courses in zoölogy are arranged in sequence as follows: Arts and Science students desiring a general scientific knowledge of the subject should elect from group A, B and D with optional elections in C. Students who do not intend to specialize in zoölogy may elect from group A or B. Those students intending to teach the subject of zoölogy or who are contemplating entering the medical profession should consult the head of the department as to the sequence of courses. However any course offered may be taken by students who have completed the required prerequisites.

Group A. Systematic Zoölogy.

51. General Zoölogy.

A detailed study of the fundamental principles of life; the nature and physiology of protoplasm; the structure of the cell and processes of cell division; the structure of the various tissues of the human body will be discussed as well as the embryonic development of the tissues. The course is essentially physiological in nature although based on the lower animals. This course will also deal with the structure, habits and life history of the different types of invertebrate animals. So far as possible, economic forms will be considered. The laboratory work will consist of the study and dissection of type forms. Two lectures and one laboratory period per week. For Agricultural and Home Economics Freshmen. Elective for Arts and Science and Mechanic Arts students.

3 hours credit. 1st S.

52. General Zoölogy.

A continuation of Zoölogy 51. The structure, habits, physiology and life history of the different types of vertebrate animals will be discussed. The economic aspect will be emphasized so far as possible and their importance and relation to man. The laboratory work will consist of the study and dissection of type forms. Two lectures and one laboratory period per week. For Agricultural and Home Economics Freshmen. Elective for Arts and Science and Mechanic Arts students.

Prerequisite—Zoölogy 51. *3 hours credit. 2d S.*

53. Faunal Zoölogy (Invertebrate).

A study of the habits, life history and identification of local invertebrate animals exclusive of the insects. The course is entirely systematic and is primarily for students intending to teach zoölogy. The work will consist of one report and six hours' laboratory work per week.

Prerequisites—Zoölogy 51 and 52. *3 hours credit. 1st S.*

54. Faunal Zoölogy (Vertebrate).

A study of the habits, life history and identification of local vertebrate animals exclusive of the birds. The course is entirely systematic and the student will be expected to become familiar with the majority of our local vertebrate animals. The work is primarily for students intending to teach zoölogy. The course will consist of one report and six hours' laboratory work per week.

Prerequisites—Zoölogy 51 and 52. *3 hours credit. 2d S.*

55. Systematic Entomology.

A laboratory course consisting of the collection and identification of insects without regard to their economic importance. The course is primarily for students of entomology. It is suggested that students electing this course collect insects during the summer. The course will consist of one report and six hours laboratory work per week.

Prerequisites—Zoölogy 51 and 52. *3 hours credit. 1st S.*

56. Ornithology.

A study of the classification, identification and economic importance of the birds. The work will consist for the most part of one lecture and two field trips per week, together with written reports. The object of the course is to enable students to identify birds at sight and to become familiar with their economic importance.

Prerequisites—Zoölogy 51 and 52. *3 hours credit. 2d S.*

Group B. Physiology, Hygiene and Sanitation.

57. Human Anatomy and Physiology.

A detailed study of the structure, physiology and histology of the human body. This is an advanced course in practical physiology. Three lectures per week. Written reports and library assignments required.

Prerequisites—Zoölogy 51 and 52. *3 hours credit. 1st S.*

58. Hygiene and Sanitation.

A study of the fundamental principles of hygiene and sanitation. The nature of disease and the method of maintaining the coördination of the body will be discussed. A practical course on the methods of improving the efficiency of the human machine. Three lectures per week with frequent written reports.

Prerequisites—Zoölogy 51, 52 and 57. *3 hours credit. 2d S.*

59. Pathology.

A continuation of Zoölogy 58, dealing with pathological aspects of disease. The effect of the principal bacterial diseases on the tissues of the body will be discussed. A more advanced course than Zoölogy 58,

dealing with many specific problems of sanitation. Three recitations per week with frequent written reports and experiments.

Prerequisites—Zoölogy 51, 52, 57 and 58. 3 hours credit. 1st S.

60. Embryology.

A detailed study of the vertebrate embryo, its method of development and the relation of the embryo to the parent. One lecture and two laboratory periods required. The laboratory work will be primarily with the frog and chick embryo. The lectures will include human embryology. Zoölogy 67, histology, may be taken parallel with embryology.

Prerequisites—Zoölogy 51, 52, 57, 58 and 67. 3 hours credit. 2d S.

61. Advanced Neurology.

A detailed study of the structure and physiology of the human nervous system. The work will consist of two laboratory periods and one lecture or recitation. The laboratory work will consist of a study of the different types of neurones, the nature of nervous impulses and a detailed study of the nervous tracts in the brain and spinal cord. The student will be expected to be able to trace both afferent and efferent impulses. The course is primarily adapted for students of psychology.

Prerequisites—Zoölogy 51, 52, 57 and 58. 3 hours credit. 1st S.

Group C. Philosophical Zoölogy.

62. Experimental Zoölogy.

Not offered in 1915 and 1916.

63. Evolution.

Lectures dealing with the theoretical side of the problem of evolution. The history of evolution and various theories of heredity, variation and selection will be discussed. Students contemplating this course are advised to take Zoölogy 60, embryology, although this is not a required prerequisite. The work is primarily for seniors although students who have completed the required prerequisites may elect evolution. Three lectures per week with written reports and reviews.

Prerequisites—Zoölogy 51, 52, 57 and 58. 3 hours credit. 1st S.

64. Eugenics.

This is primarily a study of advanced evolution, an application of the principles of evolution to human life. Students contemplating this course are advised to take Zoölogy 61, advanced neurology, although this is not a required prerequisite. Three lectures per week with written reports and reviews.

Prerequisites—Zoölogy 51, 52, 57, 58 and 63. 3 hours credit. 2d S.

Group D. Anatomical Zoölogy.

65. Comparative Anatomy of the Invertebrates.

A detailed study of the structure of different types of invertebrate animals exclusive of insects. The course is primarily for students intending to teach zoölogy. The course will consist of one report and six hours' laboratory work per week.

Prerequisites—Zoölogy 51 and 52. *3 hours credit. 1st S.*

66. Comparative Anatomy of the Vertebrates.

A detailed study of the structure of different types of vertebrate animals. Primarily for students intending to teach zoölogy. The course will consist of one report and six hours' laboratory work per week.

Prerequisites—Zoölogy 51 and 52. *3 hours credit. 2d S.*

67. Histology.

A detailed study of the structure of the tissues of vertebrate animals, cell specialization and the manner in which tissues are combined into organs. The course is primarily for students intending to teach zoölogy and a great deal of attention will be paid to the technique of histology. The course will consist of one report and six hours' laboratory work per week.

Prerequisites—Zoölogy 51, 52, 57 and 58. *3 hours credit. 1st S.*

68. Insect Anatomy.

A study of the anatomy of different types of insects. Especially adapted for students in entomology. One report and six hours' laboratory work per week.

Prerequisites—Zoölogy 51, 52 and 55. *3 hours credit. 2d S.*

Group E. Advanced Zoölogy.

69. Advanced Zoölogy.

Arranged to suit the need of those who wish to specialize in zoölogy. This course may not be elected except by students who have completed at least 18 hours in zoölogy or entomology with an average mark of at least 80 and then only on the presentation of the detailed outline of the problems they wish to study. The course is primarily for graduate students. Open only to students by special permission.

Credit and hours to be arranged. 1st S.

70. Advanced Zoölogy.

A continuation of Zoölogy 69. The course can only be elected under the above restrictions. Open only to students by special permission.

Credit and hours to be arranged. 2d S.

71. Vocational Zoölogy.

A discussion of the principles of teaching zoölogy and the application of zoölogy to other lines of work. Practical work will be under the direct supervision of the head of the department. Lectures will deal with the method of presenting the subject with the adaptation of the subject to meet the special requirements of high schools and colleges; methods of grading laboratory work and examination papers and general laboratory and class administration. The application of zoölogy to various government positions will also be discussed. Only students who have shown special proficiency in zoölogy may elect this course. Open only to students by special permission. *3 hours credit. 1st S.*

72. Vocational Zoölogy.

A continuation of Zoölogy 71. The course can only be elected under the above restrictions. Open only to students by special permission.

3 hours credit. 2d S.

FRESHMAN REQUIREMENTS FOR THE VARIOUS FOUR-YEAR COURSES.

FRESHMAN SUBJECTS.		COURSES.
Required.	Elective.	
Chemistry Drawing. English { French or German Mathematics Drill Military Science Zoölogy	None	Agricultural Division 1. Animal Husbandry and Dairy Course 2. Forestry Course 3. Horticultural Course 4. General Agricultural and Agricultural Teaching Course
English Drill Military Science *Physical Culture	Chemistry Drawing English French German History Latin Mathematics Zoölogy Economics	Arts and Science Division 1. Arts and Science Course
Chemistry English Home Economics Physical Culture Zoölogy Drawing	French German History Mathematics	2. Home Economics Course
Chemistry Drawing English Mathematics Drill Military Science Shop Work	History	3. Mechanic Arts Course for Teachers
Chemistry Drawing English Mathematics Drill Military Science Shop Work	Electrical Engineering Mechanical Engineering	Engineering Division 1. Electrical Engineering Course 2. Mechanical Engineering Course
Chemistry Drawing English Mathematics Drill Military Science Shop Work { French or German	None	3. Chemical Engineering Course

*Physical Culture for women takes the place of Drill and Military Science for men.

COURSES OF STUDY.

(For details, see Description of Studies.)

AGRICULTURAL DIVISION.

All Courses.

FRESHMAN YEAR, FIRST SEMESTER.

		Hours
Chemistry 51	Inorganic Chemistry	3
Drill 1	Military Drill	1
English 51	English Composition	3
**French 1 or*	Elementary French	3
**German 1*	Elementary German	
Mathematics 51a	Algebra and Trigonometry	4
Military Science 1	Infantry Drill Regulations	1
Zoölogy 51	General Zoölogy	3

FRESHMAN YEAR, SECOND SEMESTER.

Chemistry 52	Inorganic Chemistry	3
Drawing 54	Industrial Drawing	2
Drill 2	Military Drill	1
English 52	English Composition	3
**French 2 or*	Elementary French	3
**German 2*	Elementary German	
Mathematics 54	Surveying	2
Military Science 2	Manual of Guard Duty	1
Zoölogy 52	General Zoölogy	3

SOPHOMORE YEAR, FIRST SEMESTER.

Agronomy 51	Farm Equipment and Machinery	3
Animal Husbandry 51	Breeds of Live Stock	4
Botany 51	General Botany	3
Chemistry 59	Introductory Qualitative Analysis	2
Drill 3	Military Drill	1
Military Science 3	Field Service Regulations	1
Physics 51	Mechanics and Heat	2
Shop Work 53	Wood Work	2
Shop Work 55	Forging	1

*Any four-year agricultural student who presents at least four years' work in two foreign languages for entrance may substitute other subjects for the French or German of the freshman year.

SOPHOMORE YEAR, SECOND SEMESTER.

		Hours
**Animal Husbandry 52*	Advanced Stock Judging	2
Botany 52	General Botany	3
Chemistry 60	Quantitative Analysis	3
Dairying 52	Farm Dairying	3
Drill 4	Military Drill	1
Horticulture 52	Olericulture	2
Horticulture 54	Practical Pomology	3
Military Science 4	Field Service Regulations	1
Physics 52	Magnetism and Electricity	2

Animal Husbandry and Dairy Course.

JUNIOR YEAR, FIRST SEMESTER.

Agronomy 53	Farm Crops	3
**Animal Husbandry 55 or*	Veterinary Anatomy	3
**Dairying 53*	Buttermaking	
Entomology 1	Economic Entomology	3
Drill 5	Military Drill	1
Forestry 51	Principles of Forestry	3
Geology 51	Elementary Geology	3
Elective		2

JUNIOR YEAR, SECOND SEMESTER.

Agronomy 52	Soils	3
Animal Husbandry 54	Feeds and Feeding	3
**Animal Husbandry 56 or*	Animal Diseases	3
**Dairying 58*	Cheese Making	
Botany 56	Bacteriology	3
Dairying 54	Market Milk	3
Drill 6	Military Drill	1
Elective		2

SENIOR YEAR, FIRST SEMESTER.

Agronomy 55	Farm Management	3
Animal Husbandry 57	Animal Breeding	3
Economics 1	Elementary Economics	3
Meteorology 1	Meteorology	2
Elective		5

SENIOR YEAR, SECOND SEMESTER.

Agronomy 54	Fertilizers	3
Economics 8	Agricultural Economics	3
English 56	Argumentation and Debating	3
Elective		7

* Elective.

Forestry Course.

JUNIOR YEAR, FIRST SEMESTER.

		Hours
Botany 53	Plant Physiology	1
Drill 5	Military Drill	3
Entomology 1	Economic Entomology	3
Forestry 53	Dendrology	4
Forestry 55	Silviculture	5
Geology 51	Elementary Geology	3

JUNIOR YEAR, SECOND SEMESTER.

Agronomy 52	Soils	3
Botany 54	Plant Histology	3
Drill 6	Military Drill	1
Forestry 52	Silviculture	3
Forestry 54	Forest Mensuration	3
Horticulture 56	Landscape Gardening	3
Elective	.....	2

SENIOR YEAR, FIRST SEMESTER.

Botany 57	Plant Pathology	3
Economics 1	Elementary Economics	3
Forestry 57	Forest Protection	2
Forestry 59	Practice of Forestry	3
Meteorology 1	Meteorology	2
Elective	.....	3

SENIOR YEAR, SECOND SEMESTER.

Economics 8	Agricultural Economics	3
English 56	Argumentation and Debating	3
Forestry 56	Forest Management	4
Elective	.....	6

Horticultural Course.

JUNIOR YEAR, FIRST SEMESTER.

Agronomy 53	Farm Crops	3
Botany 53	Plant Physiology	3
Drill 5	Military Drill	1
Entomology 1	Economic Entomology	3
Forestry 51	Principles of Forestry	3
Geology 51	Elementary Geology	3
Horticulture 53	Greenhouse Management	3

JUNIOR YEAR, SECOND SEMESTER.

		Hours
Agronomy 52	Soils	3
Drill 6	Military Drill	1
Horticulture 56	Landscape Gardening	3
Horticulture 58	Nursery Management	3
Horticulture 60	Floriculture	2
Horticulture 68	Vegetable Forcing	3
Elective		3

SENIOR YEAR, FIRST SEMESTER.

Agronomy 55	Farm Management	3
Botany 57	Plant Pathology	3
Economics 1	Elementary Economics	3
Horticulture 55	Systematic Pomology	4
Horticulture 57	Evolution of Plants	2
Meteorology 1	Meteorology	2

SENIOR YEAR, SECOND SEMESTER.

Agronomy 54	Fertilizers	3
Economics 8	Agricultural Economics	3
English 56	Argumentation and Debating	3
Horticulture 62	Horticultural Seminar	1
Elective		5

General or Teaching Course.

JUNIOR YEAR, FIRST SEMESTER.

Agronomy 53	Farm Crops	3
Botany 53	Plant Physiology	3
Drill 5	Military Drill	1
Entomology 1	Economic Entomology	3
Forestry 51	Principles of Forestry	3
Geology 51	Elementary Geology	3
Elective		2

JUNIOR YEAR, SECOND SEMESTER.

Agronomy 52	Soils	3
Animal Husbandry 54	Feeds and Feeding	3
Dairying 54	Market Milk	3
Drill 6	Military Drill	1
Elective		8

NOTE—Students taking the General or Teaching Course who expect to teach science and agriculture should elect Psychology 52 in the second semester of the junior year and Psychology 53 and Sociology 54 in the senior year.

SENIOR YEAR, FIRST SEMESTER.

		Hours
Agronomy 55	Farm Management	3
Economics 1	Elementary Economics	3
Horticulture 57	Evolution of Plants	2
Meteorology 1	Meteorology	2
Elective		6

SENIOR YEAR, SECOND SEMESTER.

Agronomy 54	Fertilizers	3
Economics 8	Agricultural Economics	3
English 56	Argumentation and Debating	3
Elective		7

ARTS AND SCIENCE DIVISION.

General Arts and Science Course.

FRESHMAN YEAR, FIRST SEMESTER.

All elective except English 51 and 52, Drill and Military Science, and for women, Home Economics 1 and Physical Culture.

Chemistry 51 or / *Chemistry 55*	Inorganic Chemistry	3
Drawing 51	Engineering Drawing	2
Drill 1	Military Drill	1
English 51	English Composition and Rhetoric	3
French 1 or / *German 1*	Elementary French / Elementary German	3
History 1	European History, 476–1492	3
Home Economics 1	Personal Hygiene	1
Home Economics 3 or / *Home Economics 5*	Food Economics / Clothing	3
Latin 1	Livy	3
Mathematics 51a	Algebra and Trigonometry	4
Mathematics 51b	Trigonometry and Analytic Geometry	4
Mathematics 53	Solid Geometry	2
Military Science 1	Infantry Drill Regulations	1
Physical Culture 1	Physical Culture	1
Shop Work 51	Wood Work	2
Zoölogy 51	General Zoölogy	3

FRESHMAN YEAR, SECOND SEMESTER.

Chemistry 52 or / *Chemistry 56*	Inorganic Chemistry / Special Chemistry	3
Drawing 58	Descriptive Geometry	3

		Hours
Drawing 60	House Planning	2
Drawing 64	Free-hand or Charcoal Drawing	2
Drill 2	Military Drill	1
Economics 2	Commercial Geography	3
English 52	English Composition and Rhetoric	3
English 54	Introduction to English Literature	3
French 2 or	Elementary French	3
German 2	Elementary German	
History 2	European History, 1492–1715	3
Home Economics 2	Household Management	3
Latin 2	Horace	3
Mathematics 52	Analytic Geometry	4
Mathematics 54	Surveying (last half of semester)	2
Military Science 2	Manual of Guard Duty	1
Physical Culture 2	Physical Culture	1
Zoölogy 52	General Zoölogy	3

SOPHOMORE YEAR, FIRST SEMESTER.

All elective except Drill, Military Science and Physical Culture.

Botany 51	General Botany	3
Chemistry 57	Special Organic Chemistry	3
Chemistry 59	Introductory Qualitative Analysis	2
Drill 3	Military Drill	1
Economics 1	Elementary Economics	3
Education 1	History of Education	3
English 53	Advanced Composition and Literary Criticism	3
English 63	Writing for Publication	3
Entomology 1	Economic Entomology	3
French 3	French Prose	3
German 3	German Prose	3
History 3	European History, 1715–1815	3
Home Economics 7	Foods	3
Latin 3	Terence	3
Mathematics 55	Calculus	5
Military Science 3	Field Service Regulations	1
Physical Culture 1	Physical Culture	1
Physics 51	Mechanics and Heat	2
Physics 53	Physical Theory and Practice	6
Sociology 51	Primitive Man and Social Origins	3
Spanish 1	Elementary Spanish	3
Zoölogy 51	General Zoölogy	3
Zoölogy 53	Faunal Zoölogy (Invertebrate)	3
Zoölogy 57	Human Anatomy and Physiology	3

SOPHOMORE YEAR, SECOND SEMESTER.

		Hours
Botany 52	General Botany	3
Chemistry 68	Organic Chemistry	3
Drawing 68	The House	2
Drill 4	Military Drill	1
Economics 2	Commercial Geography	3
Education 2	School Hygiene	3
English 54	Introduction to English Literature	3
English 56	Argumentation	3
English 64	Writing for Publication	3
Entomology 2	Applied Economic Entomology	3
Entomology 4	Household Insects	2
French 4	French Prose	3
German 4	German Prose	3
History 4	European History since 1815	3
Home Economics 8	Foods	4
Latin 4	Tacitus	3
Mathematics 56	Calculus	3
Military Science 4	Field Service Regulations	1
Physical Culture 2	Physical Culture	1
Physics 52	Magnetism and Electricity	2
Physics 54	Physical Theory and Practice	6
Physics 58	Elementary Physics and Practice	3
Psychology 52	Introduction to Psychology	3
Spanish 2	Elementary Spanish	3
Zoölogy 52	General Zoölogy	3
Zoölogy 54	Faunal Zoölogy (Vertebrate)	3

JUNIOR YEAR, FIRST SEMESTER.

All elective except Drill and Physical Culture.

Botany 53	Plant Physiology	3
Botany 55	General Bacteriology	3
Botany 57	Plant Pathology	3
Chemistry 59	Introductory Qualitative Analysis	2
Chemistry 65	Quantitative Analysis	4
Chemistry 69	Organic Chemistry	2
Dairying 51	Domestic Dairying	3
Drill 5	Military Drill	1
Economics 5 or	Labor Problems	3
Economics 7	Socialism	
Economics 9	Corporation Finance	3
Economics 11	Economic Problems of the Home	2
Education 3	Class Management	3
English 53	Advanced Composition and Literary Criticism	3

		Hours
English 55 or	The English Novel	3
English 63	Writing for Publication	3
Entomology 1	Economic Entomology	3
Entomology 3	Insects of Domestic Animals	2
Entomology 5	Advanced Economic Entomology	2
French 5 or / *French 7*	French Literature and Composition	3
Geology 51	Elementary Geology	3
German 5 or / *German 7 or* / *German 13*	Goethe / Schiller / Sudermann	3
German 9 or / *German 11*	German Composition and Conversation	3
History 5	American History to 1801	3
Mathematics 57 or / *Mathematics 59*	Differential Equations / Theory of Equations	2
Military Science 5	Field Engineering and Hasty Intrenching	1
Physical Culture 1	Physical Culture	1
Physics 55	Mathematical Physics and Practice	4
Political Science 3	American Constitutional Law	3
Psychology 53	Educational Psychology	3
Psychology 55	Social Psychology	3
Sociology 53	Mental Defectives	3
Spanish 1	Elementary Spanish	3
Zoölogy 57	Human Anatomy and Physiology	3
Zoölogy 59	Human Pathology	3

JUNIOR YEAR, SECOND SEMESTER.

Botany 54	Plant Histology	2
Botany 56	Bacteriology	3
Chemistry 68	Organic Chemistry	3
Drill 6	Military Drill	1
Economics 4 or / *Economics 6*	Money and Banking / Public Finance and Taxation	3
Economics 8	Agricultural Economics	3
Education 4	School Administration and Supervision	3
English 54	Introduction to English Literature	3
English 56	Argumentation	3
English 58 or	English Drama	3
English 60	American Literature	4
English 64	Writing for Publication	3
Entomology 4	Household Insects	2

		Hours
Entomology 6	Advanced Economic Entomology	3
French 6 or / *French 8*	French Literature and Composition	3
Geology 54	Mineralogy	2
German 6 or / *German 8 or* / *German 14*	Goethe / Schiller / Sudermann	3
German 10 or / *German 12*	German Composition and Conversation	3
History 6	Constitutional and Political History of U. S. (1801–1861)	3
Mathematics 58 or / *Mathematics 60*	Determinants / History of Mathematics	2
Military Science 6	Military Map Reading and Sketching	1
Physical Culture 2	Physical Culture	1
Physics 56	Mathematical Physics and Practice	4
Political Science 2	Laws of Business	3
Psychology 52	Introduction to Psychology	3
Sociology 52	Social Pathology and Modern Philanthropy	3
Spanish 2	Elementary Spanish	3
Zoölogy 54	Faunal Zoölogy	3
Zoölogy 66	Comparative Anatomy of the Vertebrates	3

SENIOR YEAR, FIRST SEMESTER.

All elective.

Botany 53	Plant Physiology	3
Botany 55	General Bacteriology	3
Botany 57	Plant Pathology	3
Chemistry 71	Organic Chemical Laboratory	3
Dairying 51	Domestic Dairying	3
Drill 7	Military Drill	1
Economics 5 or / *Economics 7*	Labor Problems / Socialism	3
Economics 9	Corporation Finance	3
Economics 11	Economic Problems of the Home	2
English 55 or / *English 59*	English Novel / Chaucer	3
Entomology 1	Economic Entomology	3
Entomology 3	Insects of Domestic Animals	2
Entomology 5	Advanced Economic Entomology	3

		Hours
French 5 or *French 7*	French Literature and Composition	3
Geology 51	Elementary Geology	3
German 5 or *German 7 or* *German 13*	Goethe / Schiller / Sudermann	3
German 9 or *German 11*	German Composition and Conversation	3
History 7	Constitutional and Political History of U. S. since 1860	3
Mathematics 57 or *Mathematics 59*	Differential Equations / Theory of Equations	2
Meteorology 1	Meteorology	2
Military Science 7	Army Regulations	1
Political Science 3	American Constitutional Law	3
Sociology 53	Mental Defectives	3
Spanish 3	Spanish Prose	3
Thesis		2
Zoölogy 69	Advanced Zoölogy	
Zoölogy 71	Vocational Zoölogy	3

SENIOR YEAR, SECOND SEMESTER.

Botany 54	Plant Histology	2
Botany 56	Bacteriology	3
Chemistry 76	Physical and Electro Chemistry	3
Drill 8	Military Drill	1
Economics 4 or *Economics 6*	Money and Banking / Public Finance and Taxation	3
Economics 8	Agricultural Economics	3
Education 6	History and Theory of Industrial Education	3
English 58 or *English 60*	English Drama / American Literature	3 / 4
Entomology 2	Applied Economic Entomology	3
Entomology 4	Household Insects	2
French 6 or *French 8*	French Literature and Composition	3
Geology 52	Historical Geology	3
German 6 or *German 8 or* *German 14*	Goethe / Schiller / Sudermann	3
German 10 or *German 12*	German Composition and Conversation	3

		Hours
Mathematics 58 or	Determinants	2
Mathematics 60	History of Mathematical Science	
Mathematics 62	Astronomy	2
Military Science 8	Army Regulations	1
Political Science 2	Laws of Business	3
Sociology 54	Rural Sociology	3
Spanish 4	Spanish Prose	3
Thesis		1 or 2
Zoölogy 56	Ornithology	3
Zoölogy 58	Hygiene and Sanitation	3
Zoölogy 64	Eugenics	3
Zoölogy 68	Insect Anatomy	3
Zoölogy 70	Advanced Zoölogy	
Zoölogy 72	Thesis	2

Home Economics Course.

FRESHMAN YEAR, FIRST SEMESTER.

Required Subjects:

Chemistry 55	Inorganic Chemistry	3
English 51	English Composition and Rhetoric	3
Home Economics 1	Personal Hygiene	1
Home Economics 3 or	Food Economics	3
Home Economics 5	Clothing	3
Physical Culture 1	Physical Culture	1

*Elective Subjects:	Total hours	6 or 7
French 1	Elementary French	3
German 1	Elementary German	3
History 1	European History, 476–1492	3
Mathematics 51a	Algebra and Trigonometry	4
Mathematics 51b	Trigonometry and Analytic Geometry	4
Zoölogy 51	General Zoölogy	3

FRESHMAN YEAR, SECOND SEMESTER.

Required Subjects:

Chemistry 56	Special Chemistry	3
Drawing 60	House Planning	2
English 52	English Composition and Rhetoric	3
Home Economics 2	Household Methods and Management	3
Physical Culture 2	Physical Culture	1

* Other subjects may be offered for the elective requirement.

		Hours
*Elective Subjects:	Total hours	6
English 54	Introduction to English Literature	3
French 2	Elementary French	3
German 2	Elementary German	3
History 2	European History, 1492–1715	3
Zoölogy 52	General Zoölogy	3

SOPHOMORE YEAR, FIRST SEMESTER.

Required Subjects:		
Chemistry 57	Special Organic Chemistry	3
Drawing 55	Color Problems	2
Home Economics 7	Foods	3
Physical Culture 1	Physical Culture	1
Zoölogy 57a	Physiology	3
‡Elective Subjects:	Total hours	4 or 3
Botany 51	General Botany	3
English 53	Advanced Composition and Criticism	3
German 3	German Prose	3
†*Physics 51*	Mechanics and Heat	2

SOPHOMORE YEAR, SECOND SEMESTER.

Required Subjects:		
Home Economics 8	Foods	4
Drawing 68	The House	2
Physical Culture 2	Physical Culture	1
Psychology 52	Introduction to Psychology	3
‡Elective Subjects:	Total hours	6 or 7
Botany 52	General Botany	3
English 56	Argumentation	3
Entomology 4	Household Insects	2
German 4	German Prose	3
†*Physics 52*	Magnetism and Electricity	2

JUNIOR YEAR, FIRST SEMESTER.

Required Subjects:		
Botany 55	Bacteriology	3
Home Economics 11	Nutrition	3
Home Economics 13	Home Decoration	3
Physical Culture 1	Physical Culture	1

*Other subjects may be offered for the elective requirement.

† Should be elected by students not offering physics for entrance.

‡ The student has a choice of a wide range of elective subjects from all departments of the college. Other subjects may be offered for the elective requirement.

		Hours
*Elective Subjects:	Total hours	6
Dairying 51	Domestic Dairying	3
Home Economics 15	Textiles	3

JUNIOR YEAR, SECOND SEMESTER.

Required Subjects:		
Home Economics 12	Dietetics	3
Physical Culture 2	Physical Culture	1
Home Economics 16	Sanitation and Health	3
*Elective Subjects:	Total hours	9
Home Economics 18	History of Costume	2

SENIOR YEAR, FIRST SEMESTER.

Required Subjects:		
Economics 11	Economic Problems of the Home	2
Home Economics 19	Home Administration	2
*Elective Subjects:	Total hours	12
Dairying 51	Domestic Dairying	3
Home Economics 21	Seminar	3
Home Economics 23	Teaching of Domestic Art	3

SENIOR YEAR, SECOND SEMESTER.

Required Subjects:		
Home Economics 20	Humanics	2
Sociology 52	Social Pathology and Modern Philanthropy	3
*Elective Subjects:	Total hours	11
Home Economics 22	Seminar	3
Home Economics 24	Teaching of Domestic Science	3

Mechanic Arts Course for Teachers.

FRESHMAN YEAR, FIRST SEMESTER.

Chemistry 51	Inorganic Chemistry	3
Drawing 51	Engineering Drawing	2
Drill 1	Military Drill	1
English 51	English Composition and Rhetoric	3
Mathematics 51a	Algebra and Trigonometry	4
Mathematics 53	Solid Geometry	2
Military Science 1	Infantry Drill Regulations	1
Shop Work 51	Wood Work	2

*The student has a choice of a wide range of elective subjects from all departments of the college. Other subjects may be offered for the elective requirement.

FRESHMAN YEAR, SECOND SEMESTER.

		Hours
Chemistry 52	Inorganic Chemistry	3
Drawing 58	Descriptive Geometry	3
Drill 2	Military Drill	1
English 52	English Composition and Rhetoric	3
**History 2*	European History, 1492–1715	3
**Mathematics 52*	Analytic Geometry	4
Mathematics 54	Surveying (last half of semester)	2
Military Science 2	Manual of Guard Duty	1
Shop Work 52	Wood Work (first half of semester)	2

SOPHOMORE YEAR, FIRST SEMESTER.

Chemistry 59	Introductory Qualitative Analysis	2
Drawing 61	Practical Mathematics	1
Drill 3	Military Drill	1
Economics 1	Elementary Economics	3
English 53	Advanced Composition and Literary Criticism	3
**German 1*	Elementary German	3
Military Science 3	Field Service Regulations	1
Physics 51	Mechanics and Heat	2
Shop Work 59	Wood Work	2
**Zoölogy 51*	General Zoölogy	3

SOPHOMORE YEAR, SECOND SEMESTER.

Drawing 62	Machine Drawing	2
Drill 4	Military Drill	1
**English 56*	Argumentation	3
**German 2*	Elementary German	3
Military Science 4	Field Service Regulations	1
Physics 52	Magnetism and Electricity	2
Physics 58	Elementary Physics and Practice	3
Psychology 52	Introduction to Psychology	3
Shop Work 60	Wood Work	3
**Zoölogy 52*	General Zoölogy	3

JUNIOR YEAR, FIRST SEMESTER.

Drawing 65	Mechanical Drawing	1
Drill 5	Military Drill	1
Education 1	History of Education	3
**English 55 or*	The English Novel	3
**English 57*	Modern English Poetry	
Forestry 53	Dendrology	4
**Geology 51*	Elementary Geology	3
**German 3*	German Prose	3

* Elective.

		Hours
**History 1*	European History, 476–1492	3
**Military Science 5*	Field Engineering and Hasty Intrenching	1
**Sociology 51*	Primitive Man and Social Origins	3
Shop Work 65	Wood Work	3

JUNIOR YEAR, SECOND SEMESTER.

Drawing 66	Mechanical Drawing	2
Drill 6	Military Drill	1
**Economics 2*	Commercial Geography	3
**Economics 4 or*	Money and Banking	3
**Economics 6*	Public Finance and Taxation	
**Forestry 60*	Forest Utilization	3
**German 4*	German Prose	3
**History 2*	European History, 1492–1715	3
**History 6*	American History, 1801–1861	3
**Military Science 6*	Military Map Reading and Sketching	1
**Political Science 2*	Laws of Business	3
Shop Work 66	Forge Work	3

SENIOR YEAR, FIRST SEMESTER.

Drawing 71	Mechanic Arts Drawing	1
Education 3	Class Management	3
Electrical Engineering 9	Industrial Electricity	3
**English 55 or*	The English Novel	3
**English 57*	Modern English Poetry	
**German 11*	German Composition	3
**History 7*	American History since 1860	3
**Political Science 3*	American Constitutional Law	3
Psychology 53	Educational Psychology	3
Shop Work 71	Machine Work	2

SENIOR YEAR, SECOND SEMESTER.

Drawing 72	Advanced Practical Mathematics	1
Drawing 74	Architectural Drawing	1
Education 6	History and Theory of Industrial Education	3
**English 60*	American Literature	4
**Forestry 60*	Forest Utilization	3
**German 12*	German Composition	3
**History 6*	American History, 1801–1861	3
**Mechanical Engineering 70*	Steam Power Plant Design	3
Mechanical Engineering 72	Manual Training and Exercises in Practical Teaching	3

***Elective.**

		Hours
**Political Science 2*	Laws of Business	3
Shop Work 72	Machine Work	3
**Sociology 52*	Social Pathology and Modern Philanthropy	3
**Sociology 54*	Rural Sociology	3

ENGINEERING DIVISION.

Electrical and Mechanical Engineering Courses.

FRESHMAN YEAR, FIRST SEMESTER.

Chemistry 51	Inorganic Chemistry	3
Drawing 51	Engineering Drawing	2
Drill 1	Military Drill	1
†*Electrical Engineering 7*	History of Electrical Engineering	½
English 51	Composition and Rhetoric	3
Mathematics 51 b	Trigonometry and Analytic Geometry	4
Mathematics 53	Solid Geometry	2
†*Mechanical Engineering 51*	History of Mechanical Engineering	½
Military Science 1	Infantry Drill Regulations	1
Shop Work 51	Wood Work	2

FRESHMAN YEAR, SECOND SEMESTER.

Chemistry 52	Inorganic Chemistry	3
Chemistry 54	Qualitative Analysis	3
Drawing 56	Descriptive Geometry	3
Drill 2	Military Drill	1
English 52	English Composition and Rhetoric	3
Mathematics 52	Analytic Geometry	4
Military Science 2	Manual of Guard Duty	1

SOPHOMORE YEAR, FIRST SEMESTER.

Drawing 57	Machine Drawing	3
Drill 3	Military Drill	1
Mathematics 55	Calculus	5
Military Science 3	Field Service Regulations	1
Physics 53	Physical Theory and Practice	6
Shop Work 57	Forging	2

SOPHOMORE YEAR, SECOND SEMESTER.

Drill 4	Military Drill	1
Mechanical Engineering 74	Kinematics of Machinery	2
Mathematics 56	Calculus	3

* Elective.
† Elective without credit.

		Hours
Mechanical Engineering 52	Theoretical Mechanics	3
Military Science 4	Field Service Regulations	1
Physics 54	Physical Theory and Practice	6
Shop Work 62	Machine Work	2

JUNIOR YEAR, FIRST SEMESTER.

Drill 5	Military Drill	1
Electrical Engineering 1	Dynamo Electric Machinery	4
Mechanical Engineering 75	Kinematics of Machinery	2
Mechanical Engineering 53	Design of Machine Elements	3
Mechanical Engineering 55	Designing and Drawing	2
Mechanical Engineering 57	Thermodynamics	3
Mechanical Engineering 59	Mechanical Laboratory	2
Shop Work 63	General Machine Work	2

JUNIOR YEAR, SECOND SEMESTER.

Drill 6	Military Drill	1
Electrical Engineering 2	Dynamo Electric Machinery	4
Mechanical Engineering 76	Kinematics of Steam Machinery	2
Mechanical Engineering 54	Design of Machine Elements	3
Mechanical Engineering 56	Designing and Drawing	2
Mechanical Engineering 58	Thermodynamics	3
Mechanical Engineering 60	Mechanical Laboratory	2
Shop Work 64	Manufacturing	2

Electrical Engineering Course.

SENIOR YEAR, FIRST SEMESTER.

Economics 1	Elementary Economics	3
Electrical Engineering 3	Telegraph and Telephone	1
Electrical Engineering 11	Electrical Engineering Practice	4
Electrical Engineering 15	Electrical Laboratory	3
Electrical Engineering 27	Contracts and Specifications	1
Mechanical Engineering 61	Hydraulics	3
Mechanical Engineering 63	Materials of Engineering	2
Mechanical Engineering 65	Mechanical Laboratory	2

SENIOR YEAR, SECOND SEMESTER.

**Economics 4 or*	Money and Banking	3
**Economics 6*	Public Finance and Taxation	
Electrical Engineering 12	Electrical Engineering Practice	4
Electrical Engineering 14	Electrical Railways	2
Electrical Engineering 16	Electrical Laboratory	3
Electrical Engineering 24	Design of Electrical Machinery	2
Electrical Engineering 26	Illuminating Engineering	2

* Elective.

		Hours
**English 56*	Argumentation and Debating	3
**Mathematics 58 or*	Advanced Calculus	2
**Mathematics 60*	History of Mathematical Science	
**Psychology 52*	Introduction to Psychology	3
**Sociology 52*	Social Pathology	3

Mechanical Engineering Course.

SENIOR YEAR, FIRST SEMESTER.

Economics 1	Elementary Economics	3
**Electrical Engineering 27*	Contracts and Specifications	1
**Mathematics 57 or*	Differential Equations	2
**Mathematics 59*	Theory of Equations	
Mechanical Engineering 61	Hydraulics	3
Mechanical Engineering 63	Materials of Engineering	2
Mechanical Engineering 65	Mechanical Laboratory	2
Mechanical Engineering 67	Advanced Design	3
Shop Work 69	Advanced Shop Work	3

SENIOR YEAR, SECOND SEMESTER.

**Economics 4 or*	Money and Banking	3
**Economics 6*	Public Finance and Taxation	
Electrical Engineering 12	Electrical Engineering Practice	4
**English 56*	Argumentation and Debating	3
**Mathematics 58 or*	Advanced Calculus	2
**Mathematics 60*	History of Mathematical Science	
Mechanical Engineering 66	Mechanical Laboratory	3
Mechanical Engineering 68	Advanced Design	3
Mechanical Engineering 70	Steam Power Plant Design	3
**Psychology 52*	Introduction to Psychology	3
**Sociology 52*	Social Pathology	3

Chemical Engineering Course.

FRESHMAN YEAR, FIRST SEMESTER.

Chemistry 51	Inorganic Chemistry	3
Drawing 51	Engineering Drawing	2
Drill 1	Military Drill	1
English 51	English Composition and Rhetoric	3
French 1 or	Elementary French	3
German 1	Elementary German	
Mathematics 51b	Trigonometry and Analytic Geometry	4
Military Science 1	Infantry Drill Regulations	1
Shop Work 51a	Wood Work	1

* Elective.

FRESHMAN YEAR, SECOND SEMESTER.

		Hours
Chemistry 52	Inorganic Chemistry	3
Chemistry 54	Qualitative Analysis	3
Drill 2	Military Drill	1
English 52	English Composition and Rhetoric	3
French 2 or	Elementary French	3
German 2	Elementary German	
Mathematics 52	Analytical Geometry	4
Military Science 2	Manual of Guard Duty	1

SOPHOMORE YEAR, FIRST SEMESTER.

Chemistry 61	Qualitative Analysis	$1\frac{1}{4}$
Chemistry 63	Inorganic Preparations	$\frac{3}{4}$
Chemistry 65	Quantitative Analysis	4
Chemistry 67a	Organic Chemistry	2
Drill 3	Military Drill	1
German 3	German Prose	3
Mathematics 55	Calculus	5
Military Science 3	Field Service Regulations	1

SOPHOMORE YEAR, SECOND SEMESTER.

Chemistry 66	Quantitative Analysis	5
Chemistry 68a	Organic Chemistry	3
Drill 4	Military Drill	1
Geology 54	Mineralogy	2
German 4	German Prose	3
Mathematics 56	Calculus	3
Military Science 4	Field Service Regulations	1

JUNIOR YEAR, FIRST SEMESTER.

Chemistry 71	Organic Chemical Laboratory	3
Chemistry 73	Advanced Quantitative Analysis	4
Chemistry 75 or	Physical Chemistry	3
Chemistry 77	Advanced Inorganic Chemistry	
Drill 5	Military Drill	1
**Military Science 5*	Field Engineering and Hasty Intrenching	1
Physics 55	Mathematical Physics and Practice	4

JUNIOR YEAR, SECOND SEMESTER.

Chemistry 74	Advanced Quantitative Analysis	5
Chemistry 76 or	Physical and Electro Chemistry	3
Chemistry 78	Industrial Chemistry	
Chemistry 80	Metallurgy	

*Elective.

		Hours
Drill 6	Military Drill	1
**Military Science 6*	Military Map Reading and Sketching	1
Physics 56	Mathematical Physics and Practice	4
Shop Work 68	Machine Work	2

SENIOR YEAR, FIRST SEMESTER.

Chemistry 75 or	Physical Chemistry	3
Chemistry 77	Advanced Inorganic Chemistry	
Chemistry 79	Assaying	1
Chemistry 83	Advanced Quantitative Laboratory	6
**Drill 7*	Military Drill	1
Economics 1	Elementary Economics	3
Electrical Engineering 21	Industrial Electricity	3
Mechanical Engineering 71	Thermodynamics	2
**Military Science 7*	Army Regulations	1

SENIOR YEAR, SECOND SEMESTER.

Chemistry 76 or	Physical and Electro Chemistry	3
Chemistry 78	Industrial Chemistry	
Chemistry 80	Metallurgy	
Chemistry 84	Thesis	7
**Drill 8*	Military Drill	1
Electrical Engineering 22	Industrial Electricity	3
English 56 or	Argumentation and Debating	3
Sociology 52	Social Pathology	
Mechanical Engineering 74	Kinematics of Machinery	2
**Military Science 8*	Army Regulations	1

*Elective.

THE TWO-YEAR COURSE IN AGRICULTURE.

This course was established by the state legislature in 1895, and provides an opportunity to secure a training for their life work for those students who do not have the time, money or preparation to take a four-year college course.

The course is especially arranged, and suited for the young, bright boys of the farm, who expect to make a business of some line of agricultural or horticultural work. Although it is open to students who have had no previous training on the farm, the entrance of such is not encouraged because of their lack of practical experience. By independent work and close application, however, inexperienced students sometimes pass the course with credit.

The year's work closes the middle of May, so as to enable the students to get home for the spring work on the farm or to accept other positions for the summer. This short school year also permits four months' time for those students who are dependent upon their own resources to earn money for the following year.

The courses of study and the classes of the two-year course are, for the most part, separate and distinct from those of the four-year courses. The work of the first year is largely preparatory, being a study of the sciences underlying agriculture, together with some elementary agricultural and horticultural work. The second year contains optional studies so that it is possible for students to specialize in animal husbandry, dairying, horticulture or forestry. Ten hours per week on the average are spent in practical work on the farm, in the barn, greenhouses, shops or forest.

Admission.—The course is open to those who can pass a fair and reasonable examination in reading, spelling, writing, arithmetic, English grammar, geography and history of the United States. Applicants, unless over eighteen years

of age, who do not bring high school or other satisfactory certificates to show their proficiency in these subjects, will be given an entrance examination on Tuesday afternoon and Wednesday morning of the opening week of college. Applicants who are over eighteen years of age will be admitted without examination.

Expenses.—The expenses of the course will vary with the taste and frugality of the students and the kind of accommodations which they secure. The total average expense for the year, if the student holds a scholarship, is not far from $250. Many students by working for their board or room rent, or by doing various kinds of work about the college or village, are able to go through the year with a cash outlay not exceeding $150.

Opening.—The course for the year will open Wednesday, September 15, 1915, and close Wednesday, May 17, 1916. A Christmas vacation of two weeks, a winter vacation of one week, and a spring vacation of six days will be given.

Graduation.—No degree is given at the end of the course, but a certificate of graduation is issued upon its completion or the completion of its equivalent.

Students graduating from the two-year course must present to the dean on or before the second Tuesday preceding their graduation satisfactory evidence of having had practical experience in farm work, either through having lived on a farm for at least two years subsequent to the age of 12 or through having worked on a farm for at least four months subsequent to the age of 15.

Students graduating from this course in 1916 must have at least 74 credit hours.

DESCRIPTION OF STUDIES.

AGRONOMY.

PROF. TAYLOR, MR. PRINCE.

31. Farm Equipment and Soils.

Lectures on the selection, planning and equipment of a farm; fencing, drainage and farm implements. Text-book and recitations upon the formation, kinds and physical properties of soils. One afternoon per week is devoted to laboratory work. For Two-Year Students, Second Year. *Three exercises per week. 1st S.*

32. Farm Crops.

Similar to Agronomy 53. For Two-Year Students, Second Year. *Three exercises per week. 2d. S.*

34. Manures and Fertilizers.

Text-book and recitations upon the constituents of farm manures and chemical fertilizers, the care and application of manures, the home-mixing of fertilizers and the modifications required by different soils and crops. Elective for Two-Year Students, Second Year. *Two exercises per week. 2d S.*

36. Farm Management and Accounting.

Text-book, lectures, and recitations upon different types of farming, size of farms, cropping systems, live stock problems, marketing farm products, choice of a farm, and farm records and accounts. Practical work in scoring, planning and laying out farms, and in keeping farm records, accounts and inventories. Elective for Two-Year Students, Second Year. *Three exercises per week. 2d S.*

ANIMAL HUSBANDRY.

PROF. ECKMAN, ASST. PROF. MITCHELL, MR. LADD.

32. Types and Breeds of Live Stock.

Similar to Animal Husbandry 51. For Two-Year Students, First Year. *Four exercises per week. 2d S.*

34. Feeds and Feeding.

Similar to Animal Husbandry 54. For Two-Year Students, Second Year. *Three exercises per week. 2d S.*

35. Veterinary Anatomy.

Similar to Animal Husbandry 55. Elective for Two-Year Students. *Three exercises per week. 1st S.*

36. Animal Diseases.

Similar to Animal Husbandry 56. Elective for Two-Year Students. *Prerequisite—Animal Husbandry 35. Three exercises per week. 2d S.*

38. Animal Breeding.

A study of the principles and practices of animal breeding. Practice is given in tracing pedigrees. Elective for Two-Year Students, Second Year. *Two exercises per week. 2d S.*

39. Poultry.

This course covers the subjects of poultry house construction, types and breeds of poultry, feeding, killing and dressing, caponizing, and equipment. Elective for Two-Year Students.

Three exercises per week. 1st S.

40. Poultry.

This course covers the subjects of incubation, brooding, care of young stock, market poultry, poultry diseases, and poultry farm problems. Elective for Two-Year Students. *Three exercises per week. 2d S.*

BOTANY.

PROF. BUTLER.

31. Elements of Botany.

This course is devoted to the study of how plants grow and how plants feed. Lectures and laboratory work. For Two-Year Students, First Year. *Three exercises per week. 1st S.*

32. Fungous Diseases of Plants.

The principal fungous diseases, their cure and prevention. Lectures and laboratory work. For Two-Year Students, First Year.

Two exercises per week. 2d S.

CHEMISTRY.

MR. BULLARD.

32. Elementary Applications.

An elementary course, with special reference to the elements of plant food, composition of fertilizers, elements subject to exhaustion in soils, etc. For Two-Year Students, First Year.

Two exercises per week. 2d S.

DAIRYING.

PROF. RASMUSSEN, MR. WILSON, MR. PIERPONT.

31. Milk—Milk Testing.

Lectures and recitations on the composition and properties of milk, the Babcock test, the lactometer, and the inspection of milk; value and methods of keeping records of dairy cows, coöperation in dairying. For Two-Year Students, First Year. *Three exercises per week. 1st S.*

32. Market Milk.

A study of the value of milk as a food, the production and handling of market milk and of certified milk. Commercial milk inspection. Exercises will be given in the judging of milk and cream and in the scoring of dairies. Elective for Two-Year Students, Second Year.

Three exercises per week. 2d S.

33. Butter Making.

Comparative study of different systems of creaming and factors influencing the efficiency of the hand separator. A study of commercial starters, cream ripening, churning, marketing, and scoring of butter. Elective for Two-Year Students, Second Year.

Three exercises per week. 1st S.

34. Cheese Making.

Lectures and laboratory work covering the details of manufacture, curing and marketing of the more important kinds of cheese. Elective for Two-Year Students, Second Year. *Three exercises per week. 2d S.*

35. Dairy Bacteriology.

Methods of bacteriological analysis of milk and its products; relation of bacteria to milk and its products; and application of bacteriological principles to the diary industry. Course open to a limited number of students. Elective for Two-Year Students, Second Year.

Three exercises per week. 1st S.

DRAWING.

PROF. HUDDLESTON, MR. LATON.

31. Agricultural Drawing. Prof. Huddleston.

A brief study in the use of drafting instruments, followed by the drawing in plan of a model farm-stead with special study given to the arrangement of buildings individually and collectively. For Two-Year Students, Second Year. *One exercise per week. 1st S.*

ENGLISH.

PROF. RICHARDS.

31. Grammar and Elementary Composition.

For Two-Year Students, First Year. *Three exercises per week. 1st S.*

32. Grammar and Composition.

For Two-Year Students, First Year.
Prerequisite—English 31. *Three exercises per week. 2d S.*

ENTOMOLOGY.

PROF. O'KANE, MR. CLEVELAND.

32. Principles of Economic Entomology.

The relation of the structure and classification of insects to methods of insect control. The preparation and application of insecticides. Spray machinery and appliances. For Two-Year Students, First Year.
Three exercises per week. 2d S.

FORESTRY.

PROF. FOSTER.

32. Farm Forestry.

A study of the general principles of forestry with particular reference to the care and management of woodlots; the various methods of cutting and reproducing forests; artificial reforestation; nursery practice; seeding and planting; estimating standing timber; log scales; protection of forests; markets. For Two-Year Students, First Year.
Two exercises per week. 2d S.

HORTICULTURE.

PROF. GOURLEY, ASST. PROF. WOLFF, MR. SCHERRER.

31. Vegetable Gardening.

A study of the commercial methods of vegetable growing. Special attention is given to the home garden. Elective for Two-Year Students, Second Year. *Three exercises per week. 1st S.*

32. Home Decoration.

A study of ornamental trees, shrubs and flowers; their culture, proper arrangement and decorative value, with special reference to the home surroundings. Elective for Two-Year Students, Second Year.
Three exercises per week. 2d S.

33. Fruit Growing.

This course embraces a study of commercial orcharding; each fruit is studied with reference to planting, cultivating, pruning, fertilizing, picking, packing, storing and marketing. For Two-Year Students, First Year. *Three exercises per week. 1st S.*

34. Orchard Problems.

A course dealing with the principal problems of farm orchards and commercial orchard management. This course is designed to show the application of the principles of fruit growing to practical conditions. Elective for Two-Year Students, Second Year.

Two exercises per week. 2d S.

35. Greenhouse Management.

Combined lecture, demonstration and laboratory course in greenhouse management. Elective for Two-Year Students, Second Year.

Three exercises per week. 1st S.

MATHEMATICS.

31. Practical Arithmetic.

A review of arithmetic with particular reference to decimal fractions, mensuration, and percentage, showing the application of these principles to the solution of practical farm problems. For Two-Year Students, First Year. *Two exercises per week. 1st S.*

MILITARY SCIENCE AND TACTICS.

LIEUT. SUTHERLAND.

Drill.

31. Military Drill.

For Two-Year Students, First Year. *Two exercises per week. 1st S.*

32. Military Drill.

For Two-Year Students, First Year. *Two exercises per week. 2d S.*

33. Military Drill.

For Two-Year Students, Second Year.

Two exercises per week. 1st S.

34. Military Drill.

For Two-Year Students, Second Year.

Two Exercises per week. 2d S.

MILITARY SCIENCE.

31. Infantry Drill Regulations.

Practical instruction and lectures. For Two-Year Students, First Year. *One exercise per week. 1st S*

32. Manual of Guard Duty and Small Arms Firing Regulations.

Practical instruction and lectures. For Two-Year Students, First Year.

Prerequisite—Military Science 31. One exercise per week. 2d S.

33. Field Service Regulations.

For Two-Year Students, Second Year.

Prerequisite—Military Science 32. One exercise per week. 1st S.

34. Field Service Regulations.

Lectures on advance guards, outposts, etc. Continuation of Military Science 33. For Two-Year Students, Second Year.

Prerequisite—Military Science 33. One exercise per peek. 2d S.

PHYSICS.

PROF. FISHER, MR. MORAN.

31. Elementary Physics.

A study of the principles of physics, using as centers certain important practical machines, as the steam engine, the dynamo, the electric motor, etc. For Two-Year Students, Second Year.

Three exercises per week. 1st S.

SHOP WORK.

MR. PHILBRICK, MR. CAHILL.

32. Wood Work. Mr. Philbrick.

Exercises in carpenter work, joinery and framing. For Two-Year Students, First Year. *One exercise per week. 2d S.*

34. Forging. Mr. Cahill.

Exercises in upsetting, drawing, forming, hardening, tempering, and welding. For Two-Year Students, Second Year.

One exercise per week. 2d S.

SOCIOLOGY.

PROF. GROVES.

31. Elementary Social Science: Sociology.

An elementary study of the social conditions, forces, and institutions of the rural and small communities, especially in the New England states. The purpose of this course is the development of a social basis for leadership and the fulfillment of the obligations of an educated citizenship in the country and village communities. For Two-Year Students, Second Year. *Three exercises per week. 1st S.*

ZOÖLOGY.

PROF. JACKSON, MR. BATCHELDER.

31. Human Physiology and Hygiene.

A study of the structure, physiology and care of the human body. Special attention will be given to the fundamental principles of zoölogy, the nature of parasitic and bacterial diseases and the means of prevention For Two-Year Students, First Year.

Three exercises per week. 1st S.

TWO-YEAR COURSE OF STUDY.

First Year.

FIRST SEMESTER.

		Hours
Botany 31	Elements of Botany	3
Dairying 31	Milk and Milk Testing	3
Drill 31	Military Drill	1
English 31	Grammar and Elementary Composition	3
Horticulture 33	Fruit Growing	3
Mathematics 31	Practical Arithmetic	2
Military Science 31	Infantry Drill Regulations	1
Zoölogy 31	Human Physiology and Hygiene	3

SECOND SEMESTER.

Animal Husbandry 32	Breeds of Live Stock	4
Botany 32	Fungous Diseases of Plants	2
Chemistry 32	Elementary Applications	2
Drill 32	Military Drill	1
English 32	Grammar and Composition	3
Entomology 32	Economic Entomology	3
Forestry 32	Farm Forestry	2
Military Science 32	Manual of Guard Duty	1
Shop Work 32	Wood Work	1

Students who come prepared to take Freshman English may substitute English 51 for English 31.

Second Year.

FIRST SEMESTER.

Agronomy 31	Farm Equipment and Soils	3
**Animal Husbandry 35*	Veterinary Anatomy	3
**Animal Husbandry 37*	Sheep Raising	3
**Animal Husbandry 39*	Poultry	3
**Dairying 33*	Butter Making	3
**Dairying 35*	Dairy Bacteriology	3
Drawing 31	Agricultural Drawing	1
Drill 33	Military Drill	1
**Forestry 53*	Dendrology	4
**Horticulture 31*	Vegetable Gardening	3
**Horticulture 35*	Greenhouse Management	3
Military Science 33	Field Service Regulations	1
Physics 31	Elementary Physics	3
Sociology 31	Elementary Social Science	3

**Elective. Elect courses to make a total of at least 18 hours.

SECOND SEMESTER.

		Hours
Agronomy 32	Farm Crops	3
**Agronomy 34*	Manures and Fertilizers	2
**Agronomy 36*	Farm Management and Accounting	3
Animal Husbandry 34	Feeds and Feeding	3
**Animal Husbandry 36*	Animal Diseases	3
**Animal Husbandry 38*	Animal Breeding	2
**Animal Husbandry 40*	Poultry	3
**Dairying 32*	Market Milk	3
**Dairying 34*	Cheese Making	3
Drill 34	Military Drill	1
Economics 32	Elementary Social Science	3
**Forestry 54*	Forest Mensuration	3
**Horticulture 32*	Home Decoration	3
**Horticulture 34*	Orchard Problems	2
Military Science 34	Field Service Regulations	1
Shop Work 34	Iron Work	1

*Elective. Elect courses to make a total of at least 18 hours.

TWO-YEAR COURSE IN INDUSTRIAL MECHANICS.

Because of the splendid results secured in the two-year course in agriculture, the trustees have been encouraged to offer a two-year course in industrial mechanics, beginning in the fall of 1915.

This course will be offered to young men who are likely to enter the mills, factories and machine shops of the state; who will have to do with the practical problems of the telephone, gas engines, the application of water power, and other industries. It is not intended to establish a trade school in any sense, but it is hoped that the fundamental principles of mechanics developed in a practical way will be of direct benefit to the students who take these courses. It will be the endeavor to provide an opportunity for wage earners to improve their efficiency and thereby better their own and the community's wellbeing. The greatest treasure which this country holds today is the undeveloped skill and vocational possibilities, not only of the thousands of our workers everywhere, but of the great army of youth who pass annually from the doors of our elementary schools to serve in the shop, the field, and the office. It is highly important to provide some form of vocational training for every boy who can afford to spend even a year or two.

In the training we have in mind for the industrial workers of this state the purpose is twofold. First, to increase the general intelligence of young workers and to lead them to understand better their social and civic duties. Second, to increase their industrial intelligence and skill and to develop capacity for advancement within a given trade where such opportunity exists, or, where it does not, to prepare for some skilled and remunerative work in another line.

The course that will be offered will be frankly practical, simple and fundamental. It will endeavor by every proper

means to lay a foundation broad in its character and one that shall bring to the knowledge of the student underlying principles. Those who will come to take this course will gain in manual skill and productive power; they will gather a certain store of industrial knowledge; but they will also, it is hoped, acquire a certain initiative, a power of construction that will add definitely to their earning power.

Who May Enter this Course and How.—This two-year course will be open to any New Hampshire youth sixteen years or more of age who has a knowledge of the ordinary subjects taught in the grades. No written examinations will be required. Each applicant, however, must present a certificate of good moral character signed by some reliable citizen.

The course the first year will include instruction in the industrial application of electricity, in industrial physics, in mechanical drawing, in shop work, in practical mathematics and in English. The second year will include instruction in applied mechanics, in elementary machine design and in business economics.

A circular will soon be prepared giving full information in detail as to the courses to be offered and a full description of each course together with all other necessary information. Those interested should write Professor C. E. Hewitt for copies of this circular.

THE WINTER SHORT COURSES IN AGRICULTURE.

The college offers these short courses for the purpose of affording an opportunity for the boys, the young men, and the older men and women on the farms of our state to acquaint themselves with the latest and most approved principles and practices of agriculture. Since many of our farm people find it impossible to leave their homes during the spring, summer and fall months, these courses are given during the winter when most people can find time to slip away for at least a week.

There is no longer any question concerning the value of practical scientific training for those who are engaged in farming. The increasing interest in agricultural work, the higher prices of farm products and the keener competition in all lines of production is making an education and training more and more a necessity for the people on our farms. It is hoped that these "short courses" will open an additional avenue through which the college may prove its value and usefulness to the farmers of the state.

Admission.—The short courses are open to men and women 16 years of age and upward. No entrance examination is required. To be most benefited, however, by the courses, the students should be at least 18 or 20 years of age and have had some practical experience on a farm.

RENOVATING OLD FIELDS FOR HAY AND FORAGE CROPS.

This is the first short course and will begin *Monday afternoon, January 3*, and close *Saturday noon, January 8, 1916.*

Hay and forage crops to the amount of nearly eight million dollars are grown annually in New Hampshire. These crops not only greatly exceed all others in acreage

but are the most valuable of all farm crops produced. It seems fitting, therefore, that a special course of instruction should be offered to those who are primarily interested in this line of crop production.

GROWING GRAIN AND POTATOES.

This course will follow the one on hay and forage crops and will begin *Monday afternoon, January 10*, and close *Saturday noon, January 15, 1916*.

Grain growing in New Hampshire has been on the decline for a half century.

The present high prices of corn and oats and other grains should revive an interest in their home production. There are possibilities for growing grain here which are not known or appreciated by many farmers.

The potato crop in our state is worth more than a million dollars annually. We have some of the best potato soils and one of the best potato climates in the country. The average yield on 187 plots in our Boys' Potato Clubs last season was more than 300 bushels per acre. One boy had a yield of 428 bushels per acre. With the proper methods, potato growing is bound to pay.

APPLE GROWING.

This course will follow the one on growing grain and potatoes, beginning *Monday afternoon, January 17*, and closing *Saturday noon, January 22, 1916*. New Hampshire is recognized at home and abroad as one of the best apple producing states in America. However, in many sections of the state the orchards are rapidly dying out and are not being replaced. Replanting is not keeping pace with the decline. Many of the orchards at present in reasonably good condition are not living up to their possibilities; better systems of culture, more thorough spraying and more attractive packing of the fruit together with the planting of new orchards are problems which should be studied by each orchardist.

SMALL FRUITS AND POULTRY.

This course will follow the one on apple growing and will begin *Monday afternoon, January 24th,* and will close *Saturday noon, January 29th.*

Attention has been called repeatedly to the possibilities of small fruit production in the state of New Hampshire. These fruits come in at a season when the state has a very large population of summer tourists; markets can unquestionably be opened with these people. Every farmer as well as every specialist can have his share in the profits which will accrue from the careful culture of small fruits.

Poultry production in New Hampshire is increasing annually and is making up for the shortage in meat supply. It is already one of our most profitable lines of agriculture. The state is particularly adapted to poultry raising, owing largely to the good markets. Poultry products find a ready market both in summer and winter and home-grown fowls and eggs bring the highest prices.

FARMERS' WEEK COURSE.

This course will begin *Monday, January 31,* and will close *Friday, February 4.* A special program will be issued about January first, copy of which will be sent to any one upon request.

The course is designed to meet the needs of the every-day practical farmer and his wife who cannot leave home for more than a few days, but who wish to get some new ideas concerning the newest and best methods of farm and orchard and dairy operations and of household work.

COURSE IN DAIRYING.

The twenty-first annual course in dairying at the college will open *Monday, February 7,* and will close *Friday, March 10, 1916.*

Students expecting to take this course should present themselves at the registrar's office in Thompson Hall on the opening day. Lectures and laboratory work will begin on the day following.

Instruction in Dairy Practice.—Instruction in the dairy course is given by lectures, recitations and by laboratory work in the barn, dairy and creamery. The equipment in the dairy building is such that the laboratory work can be made applicable both to farm and factory conditions. The student will have an opportunity to study the construction and efficiency, and the operation of the various machines used in handling of milk and making of butter. The use of the Babcock test in apportioning the money value of milk is regulated by state law. The test is important in the successful improvement of the dairy herd. The details of the test will be studied, and the student will practise testing milk, cream, skim-milk and buttermilk until fully competent to perform the work.

The course in every respect is made as practical as possible and the instruction is planned to meet the needs of two classes of students, first, *buttermakers*, second, *dairymen* and *milk producers*.

Buttermakers.—The work in the laboratory and class room is conducted with a view to training men to be expert operators of skimming stations, creameries, and private dairies. Throughout the entire course students will be given practical work in the college creamery or dairy.

Dairymen and Milk Producers.—To make dairying in New Hampshire more profitable, the dairyman must fully understand the handling of cows and their product. The course as outlined, treating of the feeding and breeding of cattle and the handling and marketing of dairy products especially suits the need of the dairy farmer. From time to time lectures will be given by successful and practical men directly engaged in dairy work. Excursions will be taken to up-to-date dairy farms and other dairy establishments.

Opportunities in Dairy Work.—The need of competent trained dairymen is constantly increasing. There is a demand for first-class dairy products, such as butter, cheese, and condensed milk, and the making of these calls for dairymen with training. The continuous campaign for pure milk in our cities is constantly opening up positions for milk inspectors, and for men who can successfully manage dairy farms and care for the herd so as to produce sanitary milk economically. It also opens positions for men who are capable of operating milk depots and other dairy establishments. The organization of cow-test associations is opening up a new field for dairy workers. Although the college does not guarantee to find positions for those registered in the course it has opportunities to recommend students for a large number of positions. Inquiries for competent men are received throughout the year and thus far the college has been unable to supply men for all the places it has been asked to fill.

Certificates.—Students completing the required work of the dairy course, and passing satisfactory examinations, will be given certificates.

Equipment.—The New Hampshire College with its new dairy building offers excellent opportunities for giving instruction in practical dairy work.

Entirely new equipment has been installed in the college creamery, each piece of machinery being run by an individual electric motor. In addition to the milk obtained from the college herd, the creamery receives milk and cream from about forty farms. By this arrangement sufficient milk for practical work is furnished at all times. The farm dairy is equipped with the leading kinds of hand separators and hand as well as small-power churns suitable for private dairies. The milk-testing and milk inspection laboratory is equipped with Babcock testers, sediment testers, acidmeters, and other apparatus necessary for inspection of milk and cream both as to fat content and other qualities. The

creamery also contains bacteriology laboratories, a lecture room, offices, a reading room and an up-to-date milk bottling plant.

Dairy Cattle.—Representatives of the Jersey, Guernsey, Ayrshire and Holstein breeds are owned by the college and are used to acquaint the students with the different breeds and types of dairy cattle.

Prizes.—Through the courtesy of Mr. Thomas Jones Davis of Duluth, Minnesota, three suitable prizes will be given to students who rank the highest in judging dairy cattle of the different breeds.

Expenses.—Tuition in the short courses is free to residents of New Hampshire. Non-residents will pay a tuition fee of $2 for each of the one-week courses and $10 for the dairy course. Board and room will cost between $5 and $6 per week. Other expenses, including books, need not exceed a total of $5, although an allowance of $10 for the purchase of books to be taken home would be a good investment.

Description of Subjects Taught in the Dairy Course.

DAIRY PRODUCTS.

PROF. RASMUSSEN, MR. WILSON, MR. PIERPONT.

Dairying 40. Butter Making.

Lectures and recitations on the different systems of creaming milk and a comparison of the efficiency of different cream separators under varying conditions; cream ripening; churning, washing, marketing and scoring of butter. *One lecture and two laboratory periods per week.*

Dairying 41. Dairy Bacteriology.

Lectures and demonstrations on the function of bacteria and the application of bacteriological principles to dairy work, such as pasteurization, cream ripening, commercial starters and deterioration of butter. *Two exercises per week.*

Dairying 42. Market Milk.

A study of the value of milk as a food and its relation to public health. The production and handling of market milk and certified milk. Commercial milk inspection. Exercises will be given in the scoring of milk and cream, and in the scoring of dairies.

Two lectures and one laboratory period per week.

Dairying 43. Milk Testing.

This course will consist of a study of the composition, the physical and chemical properties of milk, the various methods of sampling and testing milk and cream, the testing of dairy herds and organizing and operating cow test associations. *One lecture and two laboratory periods per week.*

DAIRY CATTLE.

PROF. ECKMAN, MR. LADD.

Animal Husbandry 42. Breeds and Breeding.

Lectures and recitations upon the origin, history, characteristics, and adaptability of the breeds of dairy cattle. The practical work will consist of scoring and judging the various breeds, and in tracing pedigrees of animals in the herd books.

Two lectures and one judging period per week.

Animal Husbandry 44. Diseases of Cattle.

This course will consist of lectures and recitations upon the anatomy and physiology of the cow, with special reference to the digestive, reproductive and milk-producing organs. The common diseases, their causes and the methods of treatment will be discussed.

Three exercises per week.

Animal Husbandry 45. Feeds and Feeding.

Lectures and recitations upon the composition and digestibility of feeding stuffs. A detailed study of the different grains and feeds, and their value in a dairy ration. Practice will be given in computing and mixing rations for the dairy cow, and in fitting animals for the show ring.

Three exercises per week.

NEW HAMPSHIRE AGRICULTURAL EXPERIMENT STATION.

Most of the agricultural experiment stations of the various states, including that of New Hampshire, were founded in 1888 by an act of congress, approved March 2, 1887, known as the Hatch Act, in honor of its author. This act appropriated fifteen thousand dollars ($15,000) annually for the maintenance of an agricultural experiment station in each state. This act provides:

"That it shall be the object and duty of said experiment stations to conduct original researches or verify experiments on the physiology of plants and animals; the diseases to which they are severally subject with the remedies for the same; the chemical composition of useful plants at their different stages of growth; the comparative advantages of rotative cropping as pursued under a varying series of crops; the capacity of new plants or trees for acclimation; the analysis of soils and water; the chemical composition of manures, natural and artificial, with experiments designed to test their comparative effects on crops of different kinds; the adaptation and value of grasses and forage plants; the composition and digestibility of the different kinds of food for domestic animals; the scientific and economic questions involved in the production of butter and cheese; and such other researches or experiments bearing directly on the agricultural industry of the United States as may in each case be deemed advisable, having due regard to the varying conditions and needs of the respective states and territories." The act also provides that the results of such work shall be published in bulletins and reports.

A further endowment of the experiment stations to provide specifically for research work was made by the Adams Act, passed by congress and approved March 16, 1906,

which provided an increased annual appropriation which now amounts to $15,000 each year. This appropriation is specifically limited to the "necessary expenses of conducting original researches or experiments," and the rulings of the United States Department of Agriculture, which is vested with the supervision of the expenditures under this act, require that this appropriation be spent in fundamental investigations or researches to determine the underlying causes and principles of agricultural science, rather than for mere experiments to secure results of immediate practical application as contemplated under the Hatch Act appropriation. The purposes of the two acts are, therefore, supplementary but distinct.

The New Hampshire Agricultural Experiment Station is organized as a department of the New Hampshire College of Agriculture and the Mechanic Arts, and is administered by a board of control, elected by its board of trustees.

The publications of the station comprise 174 bulletins of the regular series and 16 circulars, 9 technical bulletins, 8 scientific contributions, and 4 school bulletins. The bulletins are issued at irregular intervals and are sent to all residents of New Hampshire requesting them. Back numbers will be sent as long as the supply lasts. Lists of available publications will be sent upon request.

The above quotations taken from the Hatch and Adams acts are sufficient to indicate the true function of this and other experiment stations called into being by the passage of those laws. At first the experiment stations found it difficult to resist the popular demand made upon them to enter the extension field, to the neglect of research, but it is to the credit of the officials having the directing and executing of those laws in charge that our stations have proved true to their trust. If the stations had not devoted their energies to the fields of original research our agriculture could not possibly be upon the high plane which it occupies to-day.

The introduction of the extension service as a recognized part of the work of this and other similar institutions only

serves to emphasize the importance of experiment station work. In our haste to produce immediate results we sometimes lose sight of the value of the work of our experiment stations. We do not realize the debt agriculture owes to the scientists who are willing to devote their life work to the study of one subject, or at least a very few subjects, without thought to personal ambition and advancement, but purely seeking after truth and the advancement of science.

We can, perhaps, best indicate in a brief way the present work of the New Hampshire Experiment Station by calling attention to some of those projects which are receiving special study and attention.

ADAMS FUND.

Agronomy Department.—Water as a limiting factor in the production of corn.

Botanical Department.—A study of the toxic action of fungicides to parasitic fungi; physiology of the apple; a study of the effect of fungicides and insecticides on plants.

Chemical Department.—Potash in clay soils.

Entomological Department.—The apple maggot; control of root maggots by insecticides.

Horticultural Department.—Plant breeding: carnation breeding, squash breeding; fruit bud formation.

Animal Husbandry Department.—Sheep breeding.

The New Hampshire Experiment Station is glad at all times to give advice and assistance regarding all lines of agriculture and we invite you to make demands upon the station whenever you feel that this institution can be of assistance to you in any capacity. The experiment station is at the service of the citizens of New Hampshire at all times.

HATCH FUND.

Agronomy Department.—Variety tests of corn; ear row test of corn; fertilizer tests on grass lands; alfalfa improvement; clover plant selection; pasture improvement; timothy selection and breeding; investigations on potato culture.

Botany Department.—Effect of storage temperature on keeping qualities of potatoes; apple diseases.

Animal Husbandry Department.—Sheep feeding; eradication of the stomach worm (Haemonchus contortus) and intestinal worms.

Entomological Department.—Control of black flies and midgets; economic collection of insects; arsenical residues on fruit, foliage and grass, following spraying, and the control of browntails.

Horticultural Department.—Variety tests of plums; variety tests of apples; variety tests of small fruits; blueberry industry in New Hampshire.

Chemical Department.—Effect of lime on New Hampshire soils.

Forestry Department.—Experiments in raising forest tree seedlings; experiments in establishing artificial forests of different species; experiments in immature white pine stands.

EXTENSION SERVICE.

The last few years have witnessed in this country a remarkable growth in the development of methods of teaching agriculture. The attitude of the public in general, as well as the rural population, toward technical agricultural training has become decidedly favorable. This change in feeling by the public toward the work of institutions offering training in agriculture has made possible and is responsible to a large extent for the unprecedented progress which has been

made in agricultural teaching during the last dozen or fifteen years.

The extension service is intended to serve as a medium by which to take the work of both the college classroom and the experiment station fields and laboratories directly to the homes and to the fields of the farmers. It is very difficult to place any just estimate upon the value of such service to a state or to the nation. The farmer's cause is no longer considered of interest only to him. It is recognized today as never before that upon the prosperity of the farmer depends quite largely the general prosperity of all classes of people. The present high cost of living has done much to attract the attention of people to the relation which the farmer and his interests bear to them personally.

What the colleges and universities are to those young men and young women who come within their walls, the extension service is, only to a lesser degree, to the thousands who are beyond the reach of the classroom. In this state, for example, we have about five hundred students enrolled at New Hampshire College, while there is a rural population in the state of nearly two hundred thousand, many of whom it is possible to reach in some tangible and helpful way through the extension service.

It may be of interest to note some of the things it has been possible to accomplish under the above named conditions and what the work should mean to the industrial interests of the state.

Space will allow only sufficient room to name some of the activities of the extension service which have been given special emphasis during the past year. This brief outline will perhaps serve to indicate in a general way the scope of the work and something as to its value to the industrial interests of the state.

Correspondence: Letters of inquiry.
Field Demonstrations: In coöperation with farmers.
Variety Tests of Corn: In coöperation with farmers, and on county farms.

Top Dressing Hay Lands: In cöoperation with farmers.
Value of Lime on New Hampshire Soils: In coöperation with 30 farmers.
Orchard Sod Mulch.
Spraying Demonstrations.
Orchard Cover Crops.
Pruning and Spraying Demonstrations.
Agricultural Reading Courses: Nine subjects.
Special Days at the College: Orchard Day, Poultry Day, Dairy Day.
College and Station exhibits at Fairs and at Agricultural meetings.
Orchard Demonstrations: Hillsboro County.
Dairy Demonstrations: Grafton County.
Boys' Club Work: Rockingham, Merrimack, Hillsboro and Cheshire Counties.
Girls' Club Work: Rockingham, Merrimack, Hillsboro and Cheshire Counties.
Soil Fertility and Crop Rotation Demonstrations: Rockingham County.
Extension Publications: 43 extension press bulletins, 14 extension circulars, 3 extension bulletins.

Extension literature is sent to a mailing list of 11,000 in the state. Publications are sent free to every one requesting them.

COÖPERATIVE AGRICULTURAL EXTENSION WORK SMITH-LEVER FUND.

Under the provisions of an act of Congress approved May 8, 1914, New Hampshire, the same as every other state, is to receive the sum of $10,000 from the federal government for supplementing and strengthening the extension work of the Agricultural College.

In addition to the annual appropriation of $10,000, each state is to share in increased allotments for seven years in the proportion which the rural population of each state is to the total rural population of all the states as determined

by the next preceding federal census provided the state shall appropriate an equal sum. If New Hampshire fulfills her part in carrying out the provisions of the Smith-Lever law, the state will receive in 1922–23 and thereafter, from the federal government, annually the sum of $24,572, for conducting coöperative demonstration work in agriculture and home economics.

This financial assistance from the federal government coming to New Hampshire as it does at a time when state and other funds are inadequate for meeting the demands which are constantly being made upon the college, will make it possible for the extension service to strengthen and develop its work along all lines and inject new life into every branch of the service.

The organization of distinct departments or divisions of extension service in connection with our state colleges and universities gives recognition and standing to the threefold function (teaching resident students; conducting investigations; and carrying information and assistance from the college and station into all parts of the state, or extension activities) of the institution and is a decided step in advance.

It will no longer be necessary for the experiment stations to carry on general miscellaneous demonstrations under the guise of research. In the earlier history of our experiment stations, before the work was clearly defined, they were practically compelled by popular demand to engage in demonstration work.

The extension service with its own corps of men will relieve the college teaching staff and station workers from much of the miscellaneous extension work which they, of necessity, have been compelled to carry on in the past.

This new organization will permit the selection and assigning of such duties to the individual as he seems best fitted to perform, which will work for efficiency in all three departments or divisions. We have the Smith-Lever law to thank for hastening the time of bringing these things to pass.

The United States Department of Agriculture has created a committee known as the States Relations Committee to take charge of and coöperate with the several states in carrying out the provisions of the Smith-Lever law. Having the extension work of each state closely associated with the work of the United States Department of Agriculture through the States Relations Committee will be a very potent factor in unifying and strengthening the extension work throughout the United States.

In starting the coöperative extension work in New Hampshire it has been the plan *first* to perfect an efficient organization through which to work; *second*, to recognize and attempt to assist in the development of the most important branches of agriculture in the state and to meet the most urgent needs for assistance in home economics.

In the carrying out of this general scheme and the memorandum of understanding entered into with the States Relations Committee whereby all extension work conducted with Smith-Lever funds should be by projects first submitted to them for approval, the following seven projects were agreed upon:

Project No. 1. Organization of Coöperative Agricultural Extension work.
Project No. 2. County Agricultural Agents.
Project No. 3. Extension Instruction—Home Economics.
Project No. 4. Dairy Cow Test Associations.
Project No. 5. Orchard Demonstrations.
Project No. 6. Movable Schools.
Project No. 7. Demonstrations in Vegetable Gardening.

Project No. 1: *Organization of Coöperative Agricultural Extension Work.*

Project No. 1 has to do with the general organization and administration of the extension work conducted with Smith-Lever funds.

Project No. 2: *County Agricultural Agents.*

Emphasis has been given to county agricultural agent work because it has been demonstrated beyond question that by having an extension representative located in each county, it makes the most efficient organization within a state for conducting extension activities.

The county agent movement serves also as an important means by which the extension service of the college may enter into coöperative agreements with the County Farmers Association and with the Office of Farmers Coöperative Demonstrations in the Northern and Western States, a new office in the United States Department of Agriculture which has immediate charge of county agent work in the northern and western states.

For financial reasons the county agent movement through the plan of coöperation cited above makes available $4 for every $1 of Smith-Lever funds expended in the county, which, in view of the unquestioned value of county agent work, commends this line of the extension service.

We have five counties organized at present and as fast as other counties can be organized it is planned to appoint other county agents until there is an agent in each county in the state.

A state leader of county agent work has been appointed to take immediate charge of the work. The state leader is employed jointly and represents the extension service of the college and the Office of Farmers Coöperative Demonstration Work in the Northern and Western States.

Project No. 3: *Extension Instruction, Home Economics.*

The Smith-Lever law makes provision for giving demonstration work in home economics. In the past the college has received a great many requests for lectures and demonstrations in home economics from all parts of the state. It has been possible to respond to only a few of these requests. Under the present plan of campaign a woman has been employed to organize women's clubs in different parts of the state.

The instructor will give demonstrations and instructions in home economics which will tend to stimulate more interest in rural life and help to improve the healthfulness, the social life, and the economic conditions of the farm homes of the state.

The instructor in home economics plans to visit the clubs at least once a month and whenever possible twice a month. Courses for reading and study are outlined to cover ten to twelve months and have to do with foods, household management, textiles and clothing, and the care and feeding of children.

Project No. 4: *Dairy Cow Test Associations.*

There are seven dairy cow test associations in successful operation in the state. These organizations are playing an important part in improving dairy conditions. Through these associations the dairy farmers are enabled to weed out unprofitable cows, they are encouraged to keep better stock, keep records of farming operations, and to feed their animals more judiciously and economically. This work reveals the truth to the dairy farmer.

A man is placed in charge of dairy cow test association work in the state to assist in the organizing of new associations, to work with the testers, to see that they are making the most of their opportunities, to be of service to the members of the associations, and to compile and publish the results of the work.

Project No. 5: *Orchard Demonstrations.*

New Hampshire is naturally an orchard state and there is a lot of interest being taken in all forms of fruit-growing. Orchard culture makes up an important branch of the agriculture of the state.

In order that the extension service may be of the greatest service to the fruit-growers of New Hampshire a man has been engaged to devote all of his time to carrying on orchard demonstrations and to giving instructions in fruit culture.

Pruning, spraying, and packing demonstrations will be given at the proper season and definite forms of orchard demonstrations setting forth approved orchard practices will be carried on in coöperation with practical growers of the state. Meetings will be held in the demonstration orchards from time to time so that results may be noted.

Project No. 6: *Movable Schools.*

To meet the demand for assistance in community improvement work movable schools have been organized. This year three general types of schools have been held; a Soils, Fertilizers and Crops School, an Orchard School and a Farm Dairy School.

The schools are held preferably in some of the smaller rural communities as they seem to be especially appreciated in such localities. These schools last four days and the lectures and demonstrations are made just as practical as it is possible to make them. Wherever possible the demonstrations are given in the field, the orchard, or in a barn in the neighborhood. Twelve schools have been held this winter which have been well attended and very much appreciated.

These movable schools offer exceptional opportunities for the extension service to become acquainted with the needs of the communities and owing to the pleasant relations which are established through the medium of the schools will be in a position to render valuable assistance to the neighborhoods.

Project No. 7: *Demonstrations in Vegetable Gardening.*

Vegetable gardening is a much neglected branch of farming in New Hampshire. Our manufacturing cities in the state create good markets. At present a large part of the vegetables consumed in our cities are grown outside the state.

For many reasons our market gardeners are not realizing from their labors and investments what they should. It is with a desire to be of service to some of those engaged in

growing vegetables for market that an experienced and trained market gardener has been employed to work with the market gardeners in the vicinity of Manchester, Nashua and Concord. The work will be of a practical nature and the demonstration plots will be carried on in coöperation with growers supplying vegetables for local markets.

It is hoped to show through these demonstration plots how the growers may meet more acceptably the demands of the local markets, and at the same time make it profitable for them to do so.

This covers in a brief way the plan of organization and lines of work which have been inaugurated under the Smith-Lever fund for conducting extension work in agriculture and home economics in New Hampshire.

DEGREES CONFERRED IN 1914.

MASTER OF SCIENCE.

Hiram Chester Holden, B.S., 1912.

BACHELORS OF SCIENCE.

Agriculture.

Bent, Horace Victor.
Combs, Ray Warren.
Jesseman, Leroy Dexter.
McCrillis, Neal.
Riford, Lloyd Stephen.
Wilder, Wallace Whittier.
Yaxis, Themistocles George.

Arts and Science.

Annis, John Harold.
Blake, Percival Moulton.
Brackett, William Henry Langdon.
Davis, John Edgar.
Garland, Russell White.
Halvorsen, George Arthur.
Krook, William Cleon.
Ladd, Daniel Watson, Jr.
McCartney, Howard Ransom.
Neal, Cecil Maurice.
Nudd, Frances Augusta.
Osgood, Wilfred Albro.
Pinkham, Valentine.
Reardon, Timothy Patrick.
Sellers, Paul Thornton.
Taylor, John Walter.

Engineering.

Bissell, Don Warren.
Dresser, Clarence Jewell.
Eastman, Harold Moses.
Ham, Guy Leslie.
Perkins, Gerald Nye.
Place, Walter Roy.
Smart, Raymond Woodus.
Smith, Fred Carl.
Woodward, Bernard.

Unclassified.

Heath, Carroll Richard.
Sanborn, Howard Weaver.
Tufts, James Arthur, Jr.

Two-Year Certificates.

Arnold, Francis Herbert.
Ayer, Ross Alvin.
Bishop, Clifton Louis.
Bishop, George Cornelius.
Brailsford, Albert.
Cram, Arthur Thomas.
Dodge, James Arthur.
Farrington, Wendell Maynard.
Groves, Reuben Spaulding.
Gummerson, Claron D.
Holmes, Russell Herbert.
Jaquith, Hollis Proctor.
Jaquith, Milo Warren.
Lane, Harold William.
McCarten, William Leonard.
McKenzie, Edward James.
Merrill, Leonard Abbott.
Mosher, Albert Erlon.
Nelson, Ernest Shirley.
Paul, Edward Alexander.
Phair, William Thomas.

HONOR LIST FOR 1914.

SPECIAL HONOR.

Average of 90 for the year's work.

1914.

Frances Augusta Nudd,	Arts and Science Course.

1915.

Leland Whitney Crafts,	Arts and Science Course.
Helen Waldron Plumer,	Arts and Science Course.

1917.

Marion Olive Chase,	Arts and Science Course.

HONOR.

Average of 80 for the year's work.

1914.

Horace Victor Bent,	Animal Husbandry and Dairying Course.
Don Warren Bissell,	Chemical Engineering Course.
Percival Moulton Blake,	Arts and Science Course.
Ray Warren Combs,	Horticultural Course.
Harold Moses Eastman,	Chemical Engineering Course.
George Arthur Halvorsen,	Arts and Science Course.
Guy Leslie Ham,	Chemical Engineering Course.
William Cleon Krook,	Arts and Science Course.
Howard Ransom McCartney,	Arts and Science Course.
Wilfred Albro Osgood,	Arts and Science Course.
Gerald Nye Perkins,	Electrical Engineering Course.
Timothy Patrick Reardon,	Arts and Science Course.
Lloyd Stephen Riford,	Animal Husbandry and Dairying Course.
Paul Thornton Sellers,	Arts and Science Course.
James Arthur Tufts, Jr.,	Unclassified Course.
Wallace Whittier Wilder,	General Agricultural Course.
Themistocles George Yaxis,	General Agricultural Course.

1915.

Raymond Jackson Bean,	Arts and Science Course.
Jack Bonardi,	Chemical Engineering Course.
Raymond Charles Bowden,	Arts and Science Course.
Marion James Broggini,	Chemical Engineering Course.
Paul Edward Corriveau,	General Agricultural Course.
Raymond Edson Dearth,	Animal Husbandry and Dairying Course.

John Spalding Elliott,	General Agricultural Course.
Harry Lothrop Farnham,	Electrical Engineering Course.
Albert William Gamash,	Forestry Course.
John Ingraham Garside,	Mechanical Engineering Course.
John Leo Grady,	Electrical Engineering Course.
Arnold Jay Grant,	Chemical Engineering Course.
Alice Joanna Hoitt,	Arts and Science Course.
Caroline Elizabeth Hoitt,	Arts and Science Course.
Anna Morse Hopkins,	Home Economics Course.
Everett Kelley Jenkins,	Mechanic Arts Course.
Roland Hugh Kinder,	Arts and Science Course.
Richard Adams Knight,	Mechanic Arts Course.
Esther Gladys McKone,	Arts and Science Course.
Earl Roger Montgomery,	Arts and Science Course.
Armand Leigh Murdoch,	Arts and Science Course.
Mary Frances Murphy,	Arts and Science Course.
Marion Edgerly Nash,	Arts and Science Course.
Walter Francis Parker,	Arts and Science Course.
Nellie Guild Poland,	Arts and Science Course.
Walter Whittier Swett,	Animal Husbandry and Dairying Course.
Lena Vernice Waldron,	Arts and Science Course.

1916.

George Wilbur Burke,	Chemical Engineering Course.
Perry Warren Burt,	Animal Husbandry and Dairying Course.
Genevieve Charbonneau,	Arts and Science Course.
Melissa Annis Cilley,	Arts and Science Course.
Alice Veva Coffin,	Home Economics Course.
Dura Prescott Crockett,	Animal Husbandry and Dairying Course.
Ralph Waldo Doeg,	Engineering Course.
Florence Lillian Dudley,	Arts and Science Course.
Stephen Webster Dyer,	Animal Husbandry and Dairying Course.
Daniel Henry Goodwin,	General Agricultural Course.
Helen Agnes Hallisey,	Arts and Science Course.
Leon Abbott Hawkins,	Horticultural Course.
Wesley Everett Howard, Jr.,	Animal Husbandry and Dairying Course.
Stephen Guy Johnson,	Animal Husbandry and Dairying Course.
Flavia Locke Jones,	Arts and Science Course.
Westley Joseph Nelson,	General Agricultural Course.
William Remick Partington,	Engineering Course.

Bernice Reed,	Arts and Science Course.
Neil Abner Sargent,	Chemical Engineering Course.
Victor Haskell Smith,	Animal Husbandry and Dairying Course.
William Thorpe Tapley,	Horticultural Course.
Walter Ira Waite,	Arts and Science Course.
Charles Adolph Weigel,	General Agricultural Course.

1917.

Goldie Basch,	Arts and Science Course.
Vance Whiting Batchelor,	Arts and Science Course.
Phyllis Mary Blanchard,	Arts and Science Course.
Arthur Samuel Burleigh,	Engineering Course.
Louise Elizabeth Burpee,	Home Economics Course.
Elmer Frank Cutts,	Engineering Course.
Natalie Drew Ewer,	Arts and Science Course.
Beatrice Louise Fall,	Arts and Science Course.
Alice Fernald,	Home Economics Course.
Isabel Jane Fernald,	Home Economics Course.
Philip Joseph Griffin,	Arts and Science Course.
Frances Dorotha Hatch,	Arts and Science Course.
Arthur Richardson Morgan,	Agricultural Course.
Henrietta Carleton Nudd,	Home Economics Course.
Julia Aurelia Roberts,	Home Economics Course.
Clarice Henrietta Shannon,	Home Economics Course.
Alberta Neal Steuerwald,	Home Economics Course.
Clark Leavitt Stevens,	Agricultural Course.
Marion Ruth Tebbetts,	Home Economics Course.
Mary Abbie Worcester,	Home Economics Course.
Helen Florence Tilton,	Arts and Science Course.

PRIZE RECORD FOR 1914.

BAILEY PRIZE—$10.

Given by Dr. C. H. Bailey, Class of '79 and E. A. Bailey, Class of '85.

Harold M. Eastman, Franklin.

ERSKINE MASON MEMORIAL PRIZE.

Lloyd Stephen Riford, Lakeport.

CHASE-DAVIS MEMORIAL MEDALS.

Gold Medal.

Howard W. Sanborn, Lochmere.

Silver Medal.

Guy Leslie Ham, Tuftonboro.

SENIOR STANDING HIGHEST IN THE MILITARY DEPARTMENT.

James Arthur Tufts, Jr., Exeter.

WINNERS OF INDIVIDUAL PRIZE DRILL.

Gold Medal.

George W. Burke, '16, Concord.

Silver Medal.

Dura P. Crockett, '16, New London.

Bronze Medal.

Wesley E. Howard, Jr., 16, Belmont.

PRIZE SABER—EXCELLENCE IN DRILL.

Arnold Jay Grant, '15, Dover.

SENIORS REPORTED TO THE ADJUTANT-GENERAL OF THE ARMY FOR APTITUDE IN DRILL.

Timothy Patrick Reardon, Concord.
Paul Thornton Sellers, Franklin.
James Arthur Tufts, Jr., Exeter.

CHEMISTRY 55 AND 56 PRIZE.

Given by Professor James for the Most Creditable Work in the Course.

Clarice Henrietta Shannon, '17, Laconia.

VALENTINE SMITH SCHOLARSHIPS.

Leland Whitney Crafts, '15, Newfields.
Ralph Waldo Doeg, '16, Exeter.
Frances Dorotha Hatch, '17, Exeter.
Martha Luena Hoitt, '18, Durham.

ROSTER OF BATTALION.

For 1914–15.

COMMANDANT.

First Lieutenant S. J. Sutherland, United States Infantry.

CADET OFFICERS AND NON-COMMISSIONED OFFICERS FIELD AND STAFF.

Major, A. J. Grant.
First Lieutenant, B. B. Fernald, *Adjutant.*
Second Lieutenant, J. L. Grady, *Quartermaster.*
Sergeant Major, L. P. Philbrick.
Quartermaster Sergeant, C. W. Archibald.
Color Sergeants, R. H. Bissell, J. A. Sullivan.

Physical Director.

Second Lieutenant, J. F. Hobbs, Jr.

BAND.

Chief Musician, F. S. Manter.
Principal Musician, G. N. Loomis.
Drum Major, P. S. Ward.

Sergeants.

J. Bonardi.
R. J. Bugbee.

Corporals.

W. H. Hoyt.
E. S. Ross.
H. C. Robinson.
G. W. Hazen.
R. W. Doeg.

COMPANY A.

Captain, R. E. Came.
First Lieutenant, G. W. Burke.
Second Lieutenant, R. I. McCartney.
First Sergeant, W. J. Nelson.

Sergeants.

M. R. McGreal.
P. W. Watson.
V. A. Perkins.
H. R. Runnals.

Corporals.

R. T. Roberts.
W. P. Knox.
E. B. Nichols.
G. D. Parnell.
E. K. Jenkins.
W. A. Dudley.

Musician.

S. W. Dyer.

COMPANY B.

Captain, R. A. Knight.
First Lieutenant, E. L. Blake.
Second Lieutenant, W. E. Howard.
First Sergeant, W. R. Partington.

Sergeants.

H. S. Kidder.
R. C. Wiggin.
F. D. Ellsworth.
V. W. Bachelor.

Corporals.

J. H. Rollins.
W. H. Thomas.
P. A. Hayden.
R. D. Brackett.
C. L. Stevens.

Musician.

H. S. Brown.

COMPANY C.

Captain, J. F. Thompson.
First Lieutenant, D. P. Crockett.
Second Lieutenant, K. E. Sawyer.
First Sergeant, L. A. Hawkins.

Sergeants.

L. B. Robinson.
H. E. Swain.
S. W. Wentworth.
R. C. Graham.

Corporals.

E. S. Johnson.
J. D. Colomy.
B. H. Dwight.
A. B. Whittemore.
R. J. Torrey.
F. P. Bennett.

Musicians.

H. T. Evans.
A. W. Burckel.

COMPANY D.

Captain, P. E. Corriveau.
First Lieutenant, C. S. Pettee.
Second Lieutenant, G. W. Chase.
First Sergeant, R. W. Jones.

Sergeants.

M. F. McMahon.
P. J. Smith.
E. L. Brackett.
H. Willand.

Corporals.

E. O. Hall.
C. Cummings.
G. A. Runnals.
R. J. McKenzie.

COMPANY E.

Captain, P. S. Willand.
First Lieutenant, W. I. Waite.
Second Lieutenant, W. T. Tapley.
First Sergeant, S. G. Johnson.

Sergeants.

K. C. Westover.
S. N. Morse.
R. S. Yeaton.
C. B. Tibbetts.

Corporals.

P. J. Griffin.
J. A. Sussman.
C. C. Bond.
E. A. Wiggin.
H. R. Meserve.
L. A. Boutwell.

Musician.

F. H. Buffum.

SIGNAL SQUAD.

Second Lieutenant, W. H. Barr.
First Sergeant, N. C. Hurd.

Corporals.

L. W. Davis.
R. F. Hayes.
J. E. Frisbee.

STUDENTS.

a. h. and *d.*—Animal Husbandry and Dairy course; *for.*—Forestry course; *hort.*—Horticultural course; *gen. a.*—General Agricultural course; Freshmen and sophomores in the agricultural course are designated by *a.* only. *c.*—Chemical Engineering; *m. e.*—Mechanical Engineering course; *e. e.* Electrical Engineering course; Freshmen, Sophomores and Juniors in the electrical and mechanical engineering courses are designated by *e.* only; *a.* and *s.*—General Arts and Science course; *h. e.*—Home Economics course; *m. a.*—Mechanic Arts course; *u.*—Unclassified.

GRADUATE STUDENTS.

Name.	P. O. Address.
Batchelder, Charles Howard, B.S.	*Durham.*
Bullard, Walter Gould, B.S.	*Dover.*
Christie, Jesse Roy, B.S. (Agr.)	*New Boston.*
Osgood, Wilfred Albro, B.S.	*Windham.*
Reiner, Frieda, B.S.	*Brooklyn, N. Y.*
Stewart, Olus J., Ph.B., A.B., M.S.	*Durham.*
Templeton, Marion Elizabeth, A.B.	*Exeter.*

SENIORS.

Name.	Course.	P. O. Address.
Bartlett, Arnold Eastman,	*a.* and *s.*	*Manchester.*
Bartlett, William Sanborn,	*m. e.*	*Manchester.*
Bean, Raymond Jackson,	*a.* and *s.*	*Laconia.*
Bonardi, Jack,	*c.*	*Lebanon.*
Bowden, Raymond Charles,	*a.* and *s.*	*York Beach, Me.*
Broggini, Mario James,	*c.*	*Milford.*
Bronson, Forrest Dinsmore,	*a.* and *s.*	*Lisbon.*
Brown, Leon Frank,	*a. h.* and *d.*	*Rochester.*
Came, Ralph Elbert,	*a.* and *s.*	*Rochester.*
Clark, Byron Humphrey,	*a.* and *s.*	*Manchester.*
Corriveau, Paul Edward,	*gen. a.*	*Concord.*
Crafts, Leland Whitney,	*a.* and *s.*	*Newfields.*
Davis, Charles Wesley,	*c.*	*Concord.*
Dearth, Raymond Edson,	*a. h.* and *d.*	*North Haverhill.*
Dustin, True Page,	*e. e.*	*Berlin.*
Farnham, Harry Lothrop,	*e. e.*	*Dover.*
Fernald, Brackett Britton,	*u.*	*Rochester.*
Fogg, Sherburne Hilliard,	*u.*	*Durham.*
Gamash, Albert William,	*for.*	*Manchester.*
Garside, John Ingraham,	*m. e.*	*Dover.*

Name.	Course.	P. O. Address.
Grady, John Leo,	*e. e.*	*Dover.*
Grant, Arnold Jay,	*c.*	*Dover.*
Haines, Ray Edward,	*m. a.*	*Lakeport.*
Halvorsen, Henry Olaf,	*a.* and *s.*	*Berlin.*
Hobbs, James Francis, Jr.,	*a.* and *s.*	*North Hampton.*
Hoitt, Alice Joanna,	*a.* and *s.*	*Durham.*
Hoitt, Caroline Elizabeth,	*a.* and *s.*	*Durham.*
Hopkins, Anna Morse,	*h. e.*	*Lakeport.*
Jenkins, Everett Kelley,	*m. a.*	*Loudon.*
Key, Yuling George,	*u.*	*Shanghai, China.*
Kinder, Roland Hugh,	*a.* and *s.*	*Marlborough.*
Knight, Richard Adams,	*m. a.*	*West Concord.*
Langley, Lester Libbey,	*a.* and *s.*	*Durham.*
Loomis, Glenn Moore,	*m. e.*	*Goffs Falls.*
McCartney, Arthur Orcutt,	*u.*	*Kingston.*
McKone, Esther Gladys,	*a.* and *s.*	*Dover.*
Montgomery, Earl Roger,	*a.* and *s.*	*Contoocook.*
Murdoch, Armand Leigh,	*a.* and *s.*	*Dover.*
Murphy, Mary Frances,	*a.* and *s.*	*Somersworth.*
Nash, Marion Edgerly,	*a.* and *s.*	*Dover.*
Odiorne, Benjamin Gilbert,	*a.* and *s.*	*Rye.*
Parker, Walter Francis,	*a.* and *s.*	*Antrim.*
Paulson, Carl Gustav,	*e. e.*	*Berlin Mills.*
Plumer, Helen Waldron,	*a.* and *s.*	*R. D., Dover.*
Poland, Nellie Guild,	*a.* and *s.*	*Lebanon.*
Reed, Clinton Arthur,	*a.* and *s.*	*Manchester.*
Sawyer, Clifford Augustus,	*a. h.* and *d.*	*Atkinson.*
Story, Irving Chellis,	*a.* and *s.*	*Claremont.*
Swett, Walter Whittier,	*a. h.* and *d.*	*Gossville.*
Thompson, John Fawdrey,	*c.*	*Tilton.*
Waldron, Lena Vernice,	*a.* and *s.*	*Center Strafford.*
Welsh, Russell Hamilton,	*u.*	*Exeter.*

JUNIORS.

Name.	Course.	P. O. Address.
Barr, William Henry,	*e.*	*Durham.*
Blake, Eston Lloyd,	*a. h.* and *d.*	*Durham.*
Brown, Harold Sunderlin,	*a.* and *s.*	*Manchester.*
Brown, Lloyd Ridley,	*a.* and *s.*	*Concord.*
Brown, Oscar Choate,	*a.* and *s.*	*Lebanon.*
Bugbee, Ralph Josiah,	*a. h.* and *d.*	*Claremont.*
Burke, George Wilbur,	*c.*	*Concord.*
Burt, Perry Warren,	*a. h.* and *d.*	*Westmoreland.*
Chamberlain, Walter Edward,	*gen. a.*	*Durham.*

Name.	Course.	P. O. Address.
Charbonneau, Genevieve Adrienne Jeannette,	*a.* and *s.*	*Nashua.*
Cilley, Melissa Annis,	*a.* and *s.*	*Colebrook.*
Chase, Guy Wetherbee,	*m. a.*	*Londonderry.*
Coffin, Alice Veva,	*h. e.*	*Boscawen.*
Crockett, Dura Prescott.	*a. h.* and *d.*	*New London.*
Davis, Leland Worthen,	*e.*	*Concord.*
Diettrich, Rosina Martha,	*h. e.*	*Hampton.*
Doeg, Ralph Waldo,	*e.*	*Exeter.*
Dole, Mary Clementina,	*a.* and *s.*	*Enfield.*
Dudley, Florence Lillian,	*a.* and *s.*	*Reed's Ferry.*
Dudley, Marion Grace,	*h. e.*	*R. D., Newmarket.*
Dwight, Bernard Henry,	*a.* and *s.*	*Manchester.*
Dyer, Stephen Webster,	*a. h.* and *d.*	*Lawrence, Mass.*
Elliott, John Spalding,	*gen. a.*	*Madbury.*
Ellsworth, Frank Drew,	*gen. a.*	*Pembroke.*
Finley, Nettie Edith Austin,	*a.* and *s.*	*Dover.*
Flanders, Mildred Maleham,	*a.* and *s.*	*Rochester.*
Fuller, Edward Deering,	*c.*	*Atkinson.*
Goodwin, Daniel Henry,	*gen. a.*	*Hollis.*
Hadley, John Corbin,	*gen. a.*	*Durham.*
Hallisey, Helen Agnes,	*a.* and *s.*	*Nashua.*
Hawkins, Leon Abbott,	*hort.*	*Plymouth.*
Hayes, Robert Foss,	*e.*	*Dover.*
Howard, Wesley Everett, Jr.,	*a. h.* and *d.*	*Belmont.*
Hurd, Norman Cannavan,	*e.*	*Dover.*
Jenness, Marion Ruth,	*a.* and *s.*	*Dover.*
Johnson, Stephen Guy,	*a. h.* and *d.*	*Winchester.*
Jones, Flavia Locke,	*a.* and *s.*	*Exeter.*
Kelley, Everette Harmon,	*a. h.* and *d.*	*Barnstead.*
Kidder, Harold Soule,	*a.* and *s.*	*Durham.*
Lary, John Dana, Jr.,	*a.* and *s.*	*Berlin.*
McCartney, Robert Irving,	*a.* and *s.*	*Kingston.*
McDuffee, Edward Clarence,	*e.*	*Claremont.*
McGreal, Michael Reilly,	*a.* and *s.*	*Somersworth.*
Manter, Frederick Sanford,	*a.* and *s.*	*Manchester.*
Mazmanian, Misak Minas,	*gen. a.*	*Durham.*
Mitchell, Marion Edwena,	*a.* and *s.*	*Newmarket.*
Morse, Stephen Noyes,	*e.*	*Ashland.*
Nelson, George Albert,	*a.* and *s.*	*Exeter.*
Nelson, Westley Joseph,	*gen. a.*	*Manchester.*
Partington, William Remick,	*e.*	*Portsmouth.*
Pennell, Philip,	*a.* and *s.*	*Gossville.*
Perkins, Vincent Aubert,	*hort.*	*Claremont.*

Name.	Course.	P. O. Address.
Pettee, Charles Swett,	*a.* and *s.*	*Durham.*
Philbrick, Leonard Parker,	*a.* and *s.*	*North Hampton.*
Purington, James Alson,	*a.* and *s.*	*Hopkinton.*
Reed, Bernice,	*a.* and *s.*	*Claremont.*
Robinson, Lewis Byron,	*gen. a.*	*R. D., Concord.*
Runnals, Herbert Richard,	*a. h.* and *d.*	*West Lebanon.*
Sanborn, Eldred Louis,	*m. a.*	*Lochmere.*
Sargent, Neil Abner,	*c.*	*Concord.*
Sawyer, Kenneth Earl,	*e.*	*Manchester.*
Smith, Robert Carl,	*a.* and *s.*	*Exeter.*
Smith, Victor Haskell,	*a. h.* and *d.*	*Hudson.*
Steele, Harold Arthur,	*a.* and *s.*	*Manchester.*
Studd, George Thomas,	*e.*	*Berlin.*
Sullivan, Joseph Albert,	*gen. a.*	*Dover.*
Swain, Howard Eugene,	*e.*	*Exeter.*
Swett, Earle Frederick,	*a.* and *s.*	*Andover.*
Tapley, William Thorpe,	*hort.*	*Revere, Mass.*
Torrey, Robert Jordan,	*a.* and *s.*	*Putnam, Conn.*
Waite, Walter Ira,	*a.* and *s.*	*Concord.*
Waldron, Carroll Charles,	*m. a.*	*Center Strafford.*
Waldron, Etta Seward,	*h. e.*	*Center Strafford.*
Ward, Paul Stanwood,	*a.* and *s.*	*Nashua.*
Watson, Earle Elwin,	*a. h.* and *d.*	*Durham.*
Watson, Philip Wilder,	*m. a.*	*Durham.*
Weigel, Charles Adolph,	*gen. a.*	*Durham.*
White, Nellie Lydia,	*a.* and *s.*	*Enfield.*
Willand, Pitt Sawyer,	*c.*	*Dover.*
Work, Olin Charles,	*m. a.*	*Exeter.*
Yeaton, Russell Stewart,	*a. h.* and *d.*	*Short Falls.*

SOPHOMORES.

Name.	Course.	P. O. Address.
Anderton, Thomas Richard,	*e.*	*Dover.*
Archibald, Clyde Warren,	*e.*	*Portsmouth.*
Baghdigian, Bagdasar Krekor,	*a.* and *s.*	*Chester.*
Basch, Goldie,	*a.* and *s.*	*Ashuelot.*
Batchelor, Vance Whiting,	*a.* and *s.*	*Durham.*
Bennett, Frank Powers,	*c.*	*Northwood.*
Blanchard, Phyllis Mary,	*a.* and *s.*	*Epping.*
Bond, Charles Chester,	*a.* and *s.*	*Lisbon.*
Boutwell, Leroy Arthur,	*e.*	*Hopkinton.*
Brackett, Josephine Edwards,	*h. e.*	*Concord.*
Brown, Willard Irving,	*a.*	*Ashland.*

Name.	Course.	P. O. Address.
Burleigh, Arthur Samuel,	*e.*	*Ossipee.*
Burpee, Louise Elizabeth,	*h. e.*	*Manchester.*
Carlisle, Sumner,	*a.*	*Exeter.*
Caswell, Henry Benson,	*m. a.*	*Barnstead.*
Chase, Marion Olive,	*a.* and *s.*	*Seabrook.*
Clark, Malcolm Barrett,	*a.* and *s.*	*Bethlehem.*
Cochran, Olin John,	*a.* and *s.*	*Windham Depot.*
Colby, Rachel Clarenda,	*h. e.*	*New Boston.*
Colomy, James Daniel,	*a.*	*Durham.*
Connor, Aloysius Joseph,	*a.* and *s.*	*Manchester.*
Cooley, Leon Weston,	*m. a.*	*Jaffrey.*
Crandall, Flora Lou,	*a.* and *s.*	*Lebanon.*
Cutts, Elmer Frank,	*e.*	*Manchester.*
Degnan, Henry W.,	*a.* and *s.*	*Nashua.*
Dudley, William Allen,	*e.*	*Colebrook.*
Dustin, Clifton Henry,	*m. a.*	*Rochester.*
Evans, George Everett,	*a.*	*East Kingston.*
Ewer, Natalie Drew,	*a.* and *s.*	*Dover.*
Fall, Beatrice Louise,	*a.* and *s.*	*Dover.*
Fernald, Alice,	*h. e.*	*Dover.*
Fernald, Isabel Jane,	*h. e.*	*Dover.*
Fitch, Frank Williams,	*a.*	*R. D., Windsor, Vt.*
Foss, George Harold,	*a.* and *s.*	*Warner.*
Frisbee, Joseph Elliot,	*e.*	*Portsmouth.*
Gilson, Marion Susan,	*h. e.*	*Windham.*
Glidden, Chester Willis,	*a.*	*Alton Bay.*
Graham, Roy Charles Lemach,	*a.*	*Candia.*
Griffin, Philip Joseph,	*a.* and *s.*	*Portsmouth.*
Hardy, Verna Carola,	*a.* and *s.*	*Concord.*
Harriman, Nathaniel Joy,	*a.* and *s.*	*Laconia.*
Hatch, Frances Dorotha,	*a.* and *s.*	*Exeter.*
Hayden, Philip A.,	*a.*	*Hollis.*
Hill, George Benjamin,	*a.*	*Dover.*
Hodgdon, Robert Edgar,	*e.*	*Rochester.*
Hoyt, Willis H.,	*a.*	*Newington.*
Hubbard, Guy,	*e.*	*Windsor, Vt.*
Hussey, Ruth Janet,	*a.* and *s.*	*Rochester.*
Jenkins, Harvey Foss,	*a.*	*Manchester.*
Johnson, Ellsworth Sheldon,	*a.*	*Springfield, Vt.*
Johnson, Myrtle May,	*a.* and *s.*	*Reed's Ferry.*
Knox, Warren Penn,	*a.*	*Dover.*
Lake, Leroy Moses,	*a.*	*Brentwood.*
Lambert, Eleanor Hurst,	*a.* and *s.*	*Durham.*
Langley, Mary Anthony,	*h. e.*	*Durham.*

Name.	Course.	P. O. Address.
Little, Harold Benjamin,	*a.*	*Colebrook.*
Lombard, Carl Weston,	*m. a.*	*Newburyport, Mass.*
Long, Edward,	*a.*	*R. D., Dover.*
Lord, Eugene Hodgdon,	*m. a.*	*Hopkinton.*
Mack, Lillian Wallace,	*h. e.*	*Derry.*
Meserve, Harlan Ray,	*a.* and *s.*	*Rochester.*
Miller, George Willard,	*a.*	*South Berwick, Me.*
Morgan, Arthur Richardson,	*a.*	*Durham.*
Nelson, Rufus Lawrence,	*e.*	*Tilton.*
Nichols, Earle Brazil,	*a.*	*Newton.*
Nixon, Leonard Russell,	*a.*	*R. D., Exeter.*
Nudd, Henrietta Carleton,	*h. e.*	*Hampton.*
O'Brien, William Henry,	*e.*	*Walpole.*
Parker, Ralph Harthan,	*a.* and *s.*	*Kingston.*
Parnell, George Downes,	*e.*	*Manchester.*
Pitman, Ralph Read,	*a.* and *s.*	*Durham.*
Reed, Beatrice,	*h. e.*	*Claremont.*
Roberts, Julia Aurelia,	*h. e.*	*Durham.*
Roberts, Ray Towle,	*e.*	*West Concord.*
Robinson, Harold Chester,	*a.* and *s.*	*Manchester.*
Robinson, Nathaniel Edwin,	*m. a.*	*R. D., Concord.*
Rollins, John Hooper,	*c.*	*Dover.*
Ross, Edgar Samuel,	*c.*	*Nashua.*
Russell, Hansell Arthur,	*a.* and *s.*	*Lebanon.*
Scruton, Herbert Ambrose,	*c.*	*Dover.*
Shannon, Clarice Henrietta,	*h. e.*	*Laconia.*
Smith, Albert Eaton,	*a.*	*Hudson.*
Steuerwald, Alberta Neal,	*h. e.*	*Dover*
Stevens, Clark Leavitt,	*a.*	*Colebrook.*
Sussman, Joseph Abraham,	*a.* and *s.*	*Portsmouth.*
Tebbetts, Marion Ruth,	*h. e.*	*Berwick, Me.*
Thomas, William Hervey,	*a.*	*Franconia.*
Tibbetts, Carleton Briggs,	*c.*	*Somersworth.*
Tilton, Helen Florence,	*a.* and *s.*	*Auburn.*
Turcotte, Abby Jewett,	*h. e.*	*Lakeport.*
Wentworth, Sidney Warren,	*a.*	*Hollis.*
Weston, Fred Webster,	*a.* and *s.*	*Lisbon.*
Weston, Helen Brown,	*h. e.*	*Lisbon.*
Westover, Kyle Chester,	*a.*	*Manchester.*
Whittemore, Arthur Benjamin,	*a.* and *s.*	*Colebrook.*
Wiggin, Edwin Albert,	*m. a.*	*Exeter.*
Wiggin, Rohl Chase,	*c.*	*Concord.*
Worcester, Mary Abbie,	*h. e.*	*Durham.*

FRESHMEN.

Name.	Course.	P. O. Address.
Abbott, James Hamilton,	*m. a.*	*Derry.*
Allen, Willard Increase, Jr.,	*a.* and *s.*	*Bridgeport, Conn.*
Andrews, Wayland Francis,	*c.*	*Newburyport, Mass.*
Atkins, Harry Clifton,	*c.*	*Franklin.*
Austin, Charles Oakley,	*a.*	*Laconia.*
Bachelder, Henry Putney,	*a.*	*East Andover.*
Badger, Phillips Brooks,	*a.*	*Portsmouth.*
Bagg, Raymond Harvey,	*e.*	*West Springfield, Mass*
Baker, John Arthur,	*c.*	*Claremont.*
Barker, Forrest Allen,	*c.*	*Nashua.*
Bartlett, Richard Cilley,	*e.*	*Derry Village.*
Batchelder, Philip,	*a.*	*Laconia.*
Bell, Ernest Lorne, Jr.,	*a.* and *s.*	*Plymouth.*
Bennett, Charles Alfred,	*a.* and *s.*	*Wakefield.*
Bennett, William Henry,	*e.*	*Lowell, Mass.*
Benson, Maurice Haynes,	*a.*	*Lebanon.*
Blatchford, George Nason,	*a.* and *s.*	*Hampton Falls.*
Brackett, Ralph de Rochemont,	*a.*	*Greenland.*
Bragdon, Doris Lillian,	*h. e.*	*Exeter.*
Brill, Milo Horace,	*a.*	*Newport.*
Broderick, Charles Bernard,	*a.*	*Exeter.*
Brown, Gladys Alice,	*a.* and *s.*	*Franklin.*
Buffum, Frank Harold,	*a.* and *s.*	*Pittsfield.*
Bugbee, Helen Marion,	*a.* and *s.*	*Claremont.*
Burckel, Arthur Walter,	*c.*	*Lawrence, Mass.*
Butterfield, Byron Goodwin,	*a.*	*Antrim.*
Byron, Rachael Agnes,	*a.* and *s.*	*Newport.*
Cahalane, Reginald Foster,	*a.* and *s.*	*Stamford, Conn.*
Came, Carleton Lord,	*c.*	*Somersworth.*
Cann, Frederick Bowman,	*a.* and *s.*	*Jaffrey.*
Castor, Amasa Hungerford,	*a.* and *s.*	*Manchester.*
Center, Mary Elizabeth,	*h. e.*	*R. D., Hudson.*
Clark, Hazel Mae,	*h. e.*	*Manchester.*
Clarke, Hugh Trescott,	*a.* and *s.*	*Canaan.*
Coburn, Charles Higgins,	*a.*	*Tyngsboro, Mass.*
Coburn, Rodney Clyde,	*c.*	*Lowell, Mass.*
Cummings, Charles,	*a.*	*Colebrook.*
Currier, Elenora,	*h. e.*	*Lochmere.*
Cushing, Mary Olive,	*h. e.*	*R. D., Concord.*
Conant, Clare Edward,	*a.*	*Keene.*
Dalton, Stanley Hatch,	*a.*	*R. D., Nashua.*
Dame, Ralph Leighton,	*a.*	*Newport.*
Daniels, Maurice Lewis,	*a.* and *s.*	*New Boston.*

Name.	Course.	P. O. Address.
Davis, Myron Frank,	*e.*	*Northwood.*
Densmore, John Francis,	*e.*	*Hanover.*
Dodge, James William,	*e.*	*Contoocook.*
Dreller, Louis,	*e.*	*Portsmouth.*
Durgin, Charles Butterworth,	*c.*	*Wilton.*
Durgin, John Frank,	*a.*	*Newmarket.*
Eastman, Eva Emma,	*a.* and *s.*	*Concord.*
Emerson, Louise Woodman,	*h. e.*	*Hampstead.*
Evans, Howard Titcomb,	*a.* and *s.*	*R.D., Amesbury, Mass.*
Ewen, Charles George,	*e.*	*Portsmouth.*
Fisher, Edward Clinton,	*a.* and *s.*	*Stamford, Conn.*
Fogg, Heman Charles,	*c.*	*Concord.*
Fletcher, Ralph,	*a.* and *s.*	*Kittery Point, Me.*
Flynn, Mildred Margaretta,	*a.* and *s.*	*Dover.*
Ford, Dorothy Marguerite,	*h. e.*	*Lebanon.*
Ford, Joseph Basil,	*a.*	*Milford,*
Foss, Edith Emily,	*a.* and *s.*	*Dover.*
French, Roger Lee,	*c.*	*Plymouth.*
Furber, Josephine Marguerite,	*h. e.*	*Laconia.*
Garland, Otis Raymond,	*a.*	*Hampton.*
George, Maurice Channing,	*e.*	*Danville.*
Goodrich, Wendell Eugene,	*c.*	*Hanover.*
Graham, Alfred Newman,	*a.* and *s.*	*Henniker.*
Griswold, James Herbert,	*a.*	*Springfield, Vt.*
Hadley, Ruth Whitney,	*h. e.*	*Durham.*
Hall, Fred William,	*a.*	*Center Strafford.*
Hardy, Ernest Winfield,	*a.*	*Contoocook.*
Harris, Florence Julia,	*h. e.*	*Laconia.*
Henneberry, Mark J.,	*c.*	*Concord.*
Hewey, Hilbert Goodrich,	*a.* and *s.*	*Durham.*
Hoitt, Martha Luena,	*h. e.*	*Durham.*
Howe, Fred John,	*a.* and *s.*	*Exeter.*
Howe, George Merrill,	*a.* and *s.*	*Contoocook.*
Humiston, John Edwin,	*a.*	*Hanover Center.*
Hunting, Ronald Walter,	*e.*	*Newport.*
Huse, Irene Meyers,	*h. e.*	*Laconia.*
Huse, Raymond Warren,	*a.*	*Manchester.*
Hutchinson, Perne Rawson,	*a.*	*Berlin.*
Hutchinson, Raymond Walch,	*a.*	*Reed's Ferry.*
Ingerson, Della May,	*h. e.*	*Starrking.*
Irvine, Howard Thompson,	*a.*	*Exeter.*
Jeffers, Weston Harvey,	*a.*	*Pike.*
Jenkins, Rodney Solon,	*a.*	*Loudon.*
Jones, Russell Cyprian,	*a.* and *s.*	*Exeter.*

Name.	Course.	P. O. Address.
Kennedy, Robert Stebbins,	*a.*	*Manchester.*
King, Elsie Louise,	*h. e.*	*Dover*
Lane, Merton Burgess,	*c.*	*Ashburnham, Mass.*
Lary, Erma Mosseau,	*h. e.*	*Berlin.*
Libby, Donald Whitney,	*a.*	*Dover.*
Lynde, Leslie Eugene,	*e.*	*Dover.*
McCarthy, Felix, Jr.,	*a.*	*Plymouth.*
McConachie, Max,	*e.*	*Manchester.*
Martin, Giles,	*e.*	*Manchester.*
Merrill, Lester Edwin,	*a.*	*Lebanon.*
Merrill, Marguerite Mae,	*a.* and *s.*	*Franklin.*
Miltimore, John Everett,	*a.*	*Derry.*
Moore, Leroy Stearns,	*c.*	*Exeter.*
Morrill, Joseph Warren,	*a.*	*Grafton.*
Morrill, Raymond Soule,	*e.*	*Warren.*
Nevers, Ralph Poor,	*c.*	*Salem, Mass.*
Oertel, August Leonard,	*a.*	*South Hadley Falls, Mass.*
Ordway, Frederick Ira, Jr.,	*a.* and *s.*	*R. D., Manchester.*
Osborne, Carver Haines,	*a.*	*West Dennis, Mass.*
Parsons, John Joseph,	*a.* and *s.*	*Somersworth.*
Perley, Sydney Harold,	*a.*	*Ipswich, Mass.*
Place, Palmer Bruce,	*c.*	*Newmarket.*
Pope, Lemuel, 3rd,	*e.*	*Portsmouth.*
Richardson, Clesson Willard,	*a.* and *s.*	*Marlborough.*
Sanders, Elmer Nason,	*c.*	*Durham.*
Sawyer, Lester Little,	*a.* and *s.*	*Lee.*
Sawyer, Robert Hamilton,	*a.*	*Bradford, Mass.*
Scovell, Earl Louis,	*a.*	*East Westmoreland.*
Sinclair, Philip Raymond,	*e.*	*Ossipee.*
Sleeper, Clarence Wilson,	*c.*	*Concord.*
Smith, Frederick,	*a.*	*New London.*
Spencer, Archie McQuesten,	*e.*	*Plymouth.*
Stearns, Sam Loring,	*a.*	*Manchester.*
Stimson, Robert Chapman,	*c.*	*New London.*
Swain, Lewis Churchill,	*a.*	*Exeter.*
Stuart, Joseph Warren,	*m. a.*	*Cumberland Mills, Me.*
Wadleigh, Clarence Benjamin,	*a.*	*Newton.*
Walker, Ethel May,	*h. e.*	*Concord.*
Wark, Harry Wiles,	*m. a.*	*Londonderry.*
Wentworth, Rollins,	*e.*	*Dover.*
White, Ollie,	*h. e.*	*Lebanon.*
Whippen, Norman Francis,	*a.*	*Kingston.*
Wiggin, Bernice Edna,	*h. e.*	*Farmington.*

Name.	Course.	P. O. Address.
Wilder, Robert Archie,	*m. a.*	*Meriden.*
Winn, Hazel Searles,	*a.* and *s.*	*Dover.*
Wright, Lena Louise,	*h. e.*	*Lebanon.*
Young, Claiborne Hart,	*a.*	*Wilton.*

SPECIAL.

Name.	P. O. Address.
Arnold, Francis Herbert,	*Durham.*
Bissell, Ralph Howard,	*Keene.*
Brailsford, Albert,	*Durham.*
Forgrave, William Matthew,	*Raymond.*
Giddings, Marian Edes,	*Waltham, Mass.*
Groves, Reuben Spaulding,	*R. D., Nashua.*
Main, Harold Crawford,	*Durham.*
Morey, Isabel Marie,	*Andover.*
Price, Fishel,	*Wolfeboro.*
Russell, Frances Elizabeth,	*Somersworth.*
Sawyer, Elizabeth Coffin,	*Dover.*
Sleeper, Roger Davis,	*So. Berwick, Me.*
Striplin, Annie Maude,	*Dover.*
Varney, Wallace Gallinger,	*Dover.*
Willand, Howard,	*Wolfeboro.*

TWO-YEAR COURSE.

Second Year.

Name.	P. O. Address.
Allen, Merritt E.,	*Spofford.*
Bennett, Ellwood Vance,	*Laconia.*
Brackett, Edwin L.,	*Concord.*
Chadwick, Paul Archie,	*North Sutton.*
Cram, Theodore Francis,	*Durham.*
Crosby, Robert Frank,	*Francestown.*
Cross, Kenneth John,	*Manchester.*
Green, Sidney James,	*Munsonville.*
Hale, Matthew Henry,	*Wolfeboro.*
Hall, Elmer Oliver,	*West Lebanon.*
Harriman, Samuel R.,	*Colebrook.*
Hazen, Gardner Williamson,	*Andover.*
Humiston, Frank,	*East Jaffrey.*
Jones, Ralph Walter,	*Concord.*
Learmonth, John Gullion,	*Salem Depot.*
Little, Edgar,	*Webster.*
McCabe, Leslie Walker,	*Henniker.*
McKenzie, Robert J.,	*Franconia.*

Name.	P. O. Address.
McMahon, Martin Francis,	*Concord.*
Morse, Oscar Varnum,	*East Hebron.*
Moss, Harold G.,	*Wolfeboro.*
Osborne, John Fred,	*R. D., Pittsfield.*
Redden, Dennis Christopher,	*Dover.*
Runnals, George Alvin,	*West Lebanon.*
Sanborn, Alfred Natt,	*Auburn.*
Seymour, George Walter,	*Pierce Bridge.*
Smith, Perley Jaques,	*Lochmere.*
Tibbetts, Alvah Herbert,	*East Wolfeboro.*
Tourtellotte, Ernest Alden,	*Mason.*
Whalin, Robert Alden,	*Greenfield.*
White, Chancey Walter,	*R. D., Concord.*

First Year.

Name.	P. O. Address.
Adams, Eloi Augustus,	*Wellesley, Mass.*
Andrew, Neal Davis,	*Littleton.*
Bassett, George Albert,	*Fremont.*
Berglund, Albert Victor,	*Henniker.*
Blanchard, George Robert,	*Greenfield.*
Callender, Robert Stebbins,	*Bethlehem.*
Carleton, Dwight Edward,	*Lancaster.*
Clark, Reginald,	*Ashland.*
Colby, Charles Hamyrle,	*Franconia.*
Corliss, Haven Ellmay,	*Lakeport.*
Crosby, Robert Shackford,	*Dover.*
Crowley, Carl Elmer,	*Ashland.*
Cutting, Adna James,	*Orford.*
Davis, Abraham Lincoln, Jr.,	*Ashland.*
Davis, Clark Edwin,	*Salem Depot.*
Denison, Hobart True,	*Harrison, Me.*
Eastman, Harold Lowell,	*Concord.*
Edgerly, Robert Kenneth,	*Worcester, Mass.*
Elam, George Henry,	*East Canterbury.*
Ewart, Raymond J.,	*North Andover, Mass.*
Flinn, Edward James,	*Jamaica Plain, Mass.*
Flood, Martin James,	*Nashua.*
Gay, Paul Baxter,	*New London.*
Gilman, Ivan F.,	*Alton.*
Goodrich, Arthur Ernest,	*Wolfeboro.*
Gordon, Charles Adams,	*New London.*
Gould, Chester Earle,	*Newton Junction.*
Griffith, Carroll Potter,	*Tamworth.*
Harling, David Herbert,	*Jaffrey.*

Name.	P. O. Address.
Harlow, John Joseph,	*North Easton, Mass.*
Harvey, Joseph Adrian,	*Portsmouth.*
Haseltine, Franklin L.,	*Reed's Ferry.*
Hughes, Elmer Cutting,	*Ashland.*
Humiston, John,	*East Jaffrey.*
Hunt, Harold Fay,	*Lebanon.*
Huntington, Lester William,	*Henniker.*
Hutchins, Edward Wardwell,	*Winchester.*
Irvine, William Henry,	*Exeter.*
Johnson, Augustus William,	*Bath.*
Joslyn, Elwyn Duane,	*Northfield, Vt.*
Kearney, Charles Augustine,	*Wellesley, Mass.*
Low, Wesley Dutton,	*Derry.*
Marshall, Frank Bell,	*Lancaster.*
Mativia, Perry Mills,	*Lyme.*
Megrath, William Augustus,	*Loudon.*
Merrill, Dean Bixby,	*North Sutton.*
Norris, Raymond Alan,	*East Derry.*
Olson, Oscar Sigfred,	*Concord.*
Peck, Robert Ernest,	*West Newton, Mass.*
Pillsbury, Albert Byron,	*Pepperell, Mass.*
Poland, Charles Wesley,	*Lebanon.*
Pratt, Stanley Warren,	*Brockton, Mass.*
Rice, Lee Langhna,	*Grafton, Mass.*
Rogers, Earl Brown,	*Nashua.*
Russell, Kenneth Samuel,	*Exeter.*
Schoolcraft, Allen Hyde,	*Cheever.*
Scovell, Charles Maxwell,	*East Westmoreland.*
Smith, Herbert Arthur,	*Hedding.*
Smith, Russell Earle,	*Vergennes, Vt.*
Sutherland, Aretas Blood,	*Plymouth.*
Swett, Harold Franklin,	*Andover.*
Taylor, Charles Mansur,	*Hinsdale.*
Thistle, Charles Alfred,	*Exeter.*
Tootill, Philip Angus,	*Grafton.*
Turner, Ralph Henry,	*East Jaffrey.*
Turner, Raymond Leavitt,	*North Reading, Mass.*
Weekes, Harold Chesley,	*Concord.*
Weston, Richard William,	*Amherst.*
Wheeler, Merton Fifield,	*Gilsum.*
Whitcomb, Harlan Jefferson,	*Brookline.*
Wilson, Frank Read,	*New Boston.*
Woodward, Joshua Loring,	*Brookline, Mass.*
Wyman, Fred Wesley,	*Goffstown.*
Young, Roscoe Adams,	*Easton.*

WINTER SHORT COURSES.

Name.	P. O. Address.
Ames, R. Morrill,	*Lakeport.*
Barker, C. W.,	*Exeter.*
Brailsford, William,	*Haverhill, Mass.*
Burton, Alex H.,	*Woodsville.*
Callowhill, Alba M.,	*South Acworth.*
Dennis, J. R.,	*Littleton.*
Dimlich, William F.,	*Salem.*
Downing, Roland E.,	*Orford.*
Eames, William M.,	*Grasmere.*
Foss, Carrie E.,	*Kingston.*
Hunt, Edward P.,	*Rindge.*
Jackson, Esther,	*Peterboro.*
Johnson, Charles P.,	*Warner.*
Kingsbury, Mrs. Fred,	*East Alstead.*
Kingston, Samuel,	*Northfield, Vt.*
Mayo, Alice G.,	*East Alstead.*
Page, Merle,	*Alstead.*
Sargent, Paul N.,	*East Kingston.*
Shay, John F.,	*Nashua.*
Thompson, Caroline S.,	*Epping.*
Walker, Herbert G.,	*Franconia.*
Webster, Edward,	*Boscawen.*
Wentworth, Ernest A.,	*Dover.*
Wheeler, Ruth O.,	*Salem Depot.*
Willoughby, A. B.,	*Holderness.*
Young, Martin,	*Temple.*

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Seniors	52
Juniors	81
Sophomores	98
Freshmen	134
Special Students	15
Students in Two-Year Course	105
Students in Winter Short Courses	26
Students in One-Week Course	300
Total	818
Total (not including One-Week Course)	518

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VOLUME VII NUMBER 4

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1916–1917

FORTY-EIGHTH YEAR

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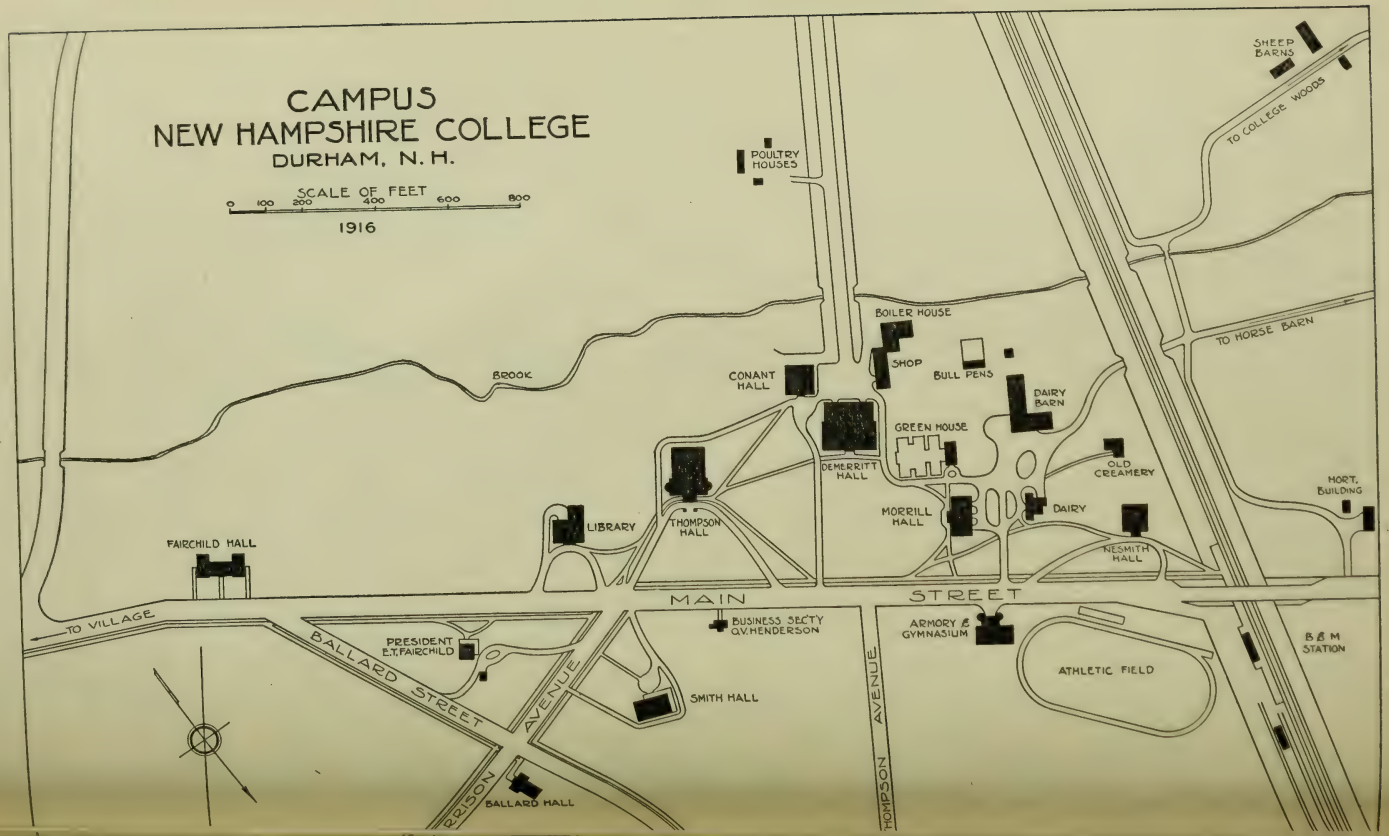
ANNOUNCEMENT, 1916-1917

Durham, New Hampshire
Published by the College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PRESIDENT E.T. FAIRCHILD
BALLARD STREET
AVENUE
ATHLETIC FIELD
SMITH HALL
THOMPSON AVENUE
BALLARD HALL

The New Hampshire College of Agriculture and the Mechanic Arts Bulletin

Durham, New Hampshire

APRIL, 1916

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CALENDAR

1916

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JANUARY.

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DECEMBER.

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16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31	..	..	..	..	..

COLLEGE CALENDAR.

1916.

First Semester.

Entrance Examinations begin	*Tuesday, September 5.*
Registration Day	*Wednesday, September 13.*
Address to Student Body	*Thursday, September 14.*
Meeting of Trustees	*Wednesday, October 11.*
Columbus Day	*Thursday, October 12.*
College closes at noon	*Wednesday, November 29.*
College opens at noon	*Monday, December 4.*
College closes, 4 p. m.	*Friday, December 22.*

1917.

College opens at noon	*Monday, January 8.*
Meeting of Trustees	*Wednesday, January 10.*
Midyear Examinations begin	*Monday, January 22.*
Midyear Examinations close	*Saturday, January 27*

Second Semester.

Registration Day	*Monday, January 29.*
Washington's Birthday	*Thursday, February 22.*
No exercises after 10 a. m.	*Tuesday, March 13.*
College closes, 4 p. m.	*Wednesday, April 4.*
Meeting of Trustees	*Wednesday, April 11.*
College opens, 8 a. m.	*Tuesday, April 17.*
Junior Promanade begins, 4 p. m.	*Thursday, May 10.*
Junior Promanade closes, 2 p. m.	*Sunday, May 13.*
Graduation Two-year Course	*Wednesday, May 16.*
Memorial Day,	*Wednesday, May 30.*
Senior Examinations close, 4 p. m.	*Tuesday, June 5.*
Final Examinations begin	*Monday, June 4.*
Final Examinations close	*Saturday, June 9.*
Baccalaureate Sermon	*Sunday, June 10.*
Class Day	*Tuesday, June 12.*
Meeting of Trustees	*Tuesday, June 12.*
Commencement Day	*Wednesday, June 13.*

BOARD OF TRUSTEES.

His Excellency, Governor ROLLAND H. SPAULDING, LL.D., *ex-officio.*

President EDWARD T. FAIRCHILD, A.M., D.Pd., LL.D., *ex-officio.*

*Hon. HARVEY L. BOUTWELL, B.S., LL.D., Malden, Mass., *President.*
Sept. 1, 1911, to Sept. 1, 1917.

Hon. JAMES A. TUFTS, A.B., Exeter, *Secretary.*
Jan. 10, 1914, to June 14, 1916.

Hon. WALTER DREW, Colebrook.
Aug. 30, 1902, to Aug. 30, 1917.

*Hon. EDWARD H. WASON, B.S., D.Sc., Nashua.
Jan. 16, 1906, to July 1, 1916.

Hon. GEORGE H. BINGHAM, A.B., LL.B., Manchester.
Dec. 2, 1908, to Dec. 2, 1917.

Hon. RICHARD W. SULLOWAY, A.B., Franklin.
Oct. 9, 1915, to Oct. 9, 1918.

Hon. WILLIAM H. CALDWELL, B.S., Peterborough.
Oct. 9, 1915, to Oct. 9, 1918.

Hon. JOHN W. PRENTISS, Alstead.
Jan. 10, 1914, to June 14, 1916.

Hon. WILLIS McDUFFEE, A.B., Rochester.
Jan. 10, 1914, to June 14, 1916.

Hon. DANA J. BROWN, Ossipee.
July 17, 1914, to July 17, 1917.

Hon. DWIGHT L. HALL, A.B., Dover.
Oct. 7, 1915, to Oct. 7, 1918.

OFFICERS OF ADMINISTRATION.

EDWARD T. FAIRCHILD, A.M., D.Pd., LL.D., *President of the College.*

CHARLES H. PETTEE, A.M., C.E., LL.D., *Dean of the College.*

FREDERICK W. TAYLOR, B.Sc. (Agr.), *Dean of Agricultural Division.*

CHARLES E. HEWITT, B.S., M.M.E., *Dean of Engineering Division.*

ERNEST R. GROVES, A.B., B.D., *Dean of Arts and Science Division.*

NELLIE E. GOLDTHWAITE, B.S., Ph.D., *Dean of Women.*

WALTER M. PARKER, A.B., *Treasurer.*

JOHN C. KENDALL, B.S., *Director of Experiment Station and Extension Work.*

* Elected by the Alumni Association.

CHARLES W. STONE, A.M., *Superintendent of Farm.*
OSCAR W. STRAW, *Superintendent of Power and Service and Curator of Buildings.*
CONDA J. HAM, A.B., *Registrar and Secretary of the Faculty.*
OREN V. HENDERSON, *Business Secretary.*

ASSISTANTS IN ADMINISTRATION.

MARTHA F. EMERSON, *Librarian.*
CHARLOTTE A. THOMPSON, *Assistant Librarian.*
MARCIA N. SANDERS, *Matron of Smith Hall.*
ELIZABETH P. DEMERITT, *Matron of Ballard Hall.*
NATHANIEL E. CURTIS, *Proctor of Fairchild Hall.*
ANNIE J. MORGAN, *Manager of Book Store.*
VELMA W. DAVIS, *Secretary to the President.*
BEATRICE M. RICHMOND, *Bookkeeper.*
BEULAH M. MADDOX, *Stenographer.*
MARTHA C. BLODGETT, A.B., *Secretary to the Dean.*

THE COLLEGE FACULTY* AND TEACHING STAFF.

EDWARD T. FAIRCHILD, A.M., D.Pd., LL.D., *President of the College.*

PROFESSORS.†

CHARLES H. PETTEE, A.M., C.E., LL.D., *Dean and Professor of Mathematics.*
CLARENCE W. SCOTT, A.M., LL.D., *Professor of History.*
FREDERICK W. TAYLOR, B.Sc. (Agr.), *Dean of Agricultural Division and Professor of Agronomy.*
RICHARD WHORISKEY, JR., A.B., *Professor of Modern Languages.*
CHARLES E. HEWITT, B.S., M.M.E., *Dean of Engineering Division and Professor of Electrical Engineering.*
ERNEST R. GROVES, A.B., B.D., *Dean of Arts and Science Division and Professor of Sociology.*
FRED RASMUSSEN, B.S.A., *Professor of Dairying.*
C. FLOYD JACKSON, B.S., M.A., *Professor of Zoölogy and Entomology.*
WALTER C. O'KANE, A.M., *Professor of Economic Entomology.*
CHARLES JAMES, F.I.C., *Professor of Chemistry.*
WILLARD J. FISHER, PH.D., *Professor of Physics.*
ALFRED E. RICHARDS, PH.D., *Professor of English.*
ORMOND R. BUTLER, PH.D., *Professor of Botany.*
JOSEPH H. GOURLEY, M.S., *Professor of Horticulture.*
OTTO L. ECKMAN, B.S. (Agr.), *Professor of Animal Husbandry.*

* The faculty is composed of the president of the college, full professors, associate professors, assistant professors, and the director of the experiment station and of extension work.

† Arranged in order of seniority of appointment.

GUY C. SMITH, Ph.B., *Professor of Economics.*
JOHN C. KENDALL, B.S, *Director of Experiment Station and Extension Work.*
ERIC T. HUDDLESTON, B.Arch., *Professor of Drawing and Design.*
SAMUEL J. SUTHERLAND, *First Lieutenant U. S. Infantry, Professor of Military Science and Tactics.*
CHARLES L. SIMMERS, B.A., *Professor of Education and Psychology.*
ROY H. PORTER, B.S., M.E., *Professor of Mechanical Engineering.*
WILLIAM H. COWELL, B.S., *Physical and Athletic Director.*
KARL W. WOODWARD, A.B., M.F., *Professor of Forestry.*
NELLIE E. GOLDTHWAITE, B.S., Ph.D., *Dean of Women and Professor of Home Economics.*

ASSOCIATE PROFESSORS.†

FRANK C. MOORE, A.B., *Associate Professor of Mathematics.*
GEORGE A. PERLEY, M.S., *Associate Professor of Chemistry.*
CHARLES C. STECK, A.B., M.S., *Associate Professor of Mathematics.*

ASSISTANT PROFESSORS.†

WILLIAM H. WOLFF, M.S., *Assistant Professor of Pomology.*
FRANK E. McKONE, B.S., *Assistant Professor of Mechanical Engineering.*
LEON W. HITCHCOCK, B.S., *Assistant Professor of Electrical Engineering.*
FREDERICK W. WHITMAN, A.B., *Assistant Professor of Modern Languages.*
CAROLINE A. BLACK, Ph.D., *Assistant Professor of Botany.*
ROBERT V. MITCHELL, B.S., *Assistant Professor of Animal Husbandry in charge of Poultry.*
HAROLD H. SCUDDER, B.S., *Assistant Professor of English.*
FORD S. PRINCE, B.S., *Assistant Professor in Agronomy.*
FRIEDA REINER, B.S., *Assistant Professor in Home Economics.*

INSTRUCTORS.†

THOMAS J. LATON, B.S., *Instructor in Drawing.*
W. ROSS WILSON, B.S. (Agr.), *Instructor in Dairying.*
JAMES H. CAHILL, *Instructor in Machine Work and Forging.*
OLUS J. STEWART, Ph.B., A.B., M.S., *Instructor in Chemistry.*
JOHN B. SCHERRER, B.S., *Instructor in Vegetable Gardening.*
CLEMENT MORAN, A.B., *Instructor in Physics.*
CHARLES H. OTIS, Ph.D., *Instructor in Botany.*
CONDA J. HAM, A.B., *Instructor in Economics.*

† Arranged in order of seniority of appointment.

HARRY P. YOUNG, B.S., *Instructor in Agronomy.*
JAMES MACFARLANE, *Instructor in Floriculture.*
CLIFFORD J. FAWCETT, B.S., *Instructor in Animal Husbandry.*
LYMAN J. BATCHELDER, *Instructor in Wood Shop and Foundry Practice.*
CHARLES FIELD SCOTT, B.S., *Instructor in Political Science.*

ASSISTANTS.

CHARLES H. BATCHELDER, B.S., M.S., *Assistant in Zoölogy.*
CLARENCE R. CLEVELAND, A.B., *Assistant in Economic Entomology.*
ARTHUR S. AMBROSE, B.S., *Assistant in Dairying.*
ARNOLD J. GRANT, B.S., *Assistant in Chemistry.*
RAYMOND J. BEAN, B.S., *Assistant in Zoölogy.*
ALBERT W. GAMASH, B.S., *Assistant in Forestry.*
ARNOLD E. BARTLETT, B.S., *Assistant in Modern Languages and Mathematics.*

NEW HAMPSHIRE AGRICULTURAL EXPERIMENT STATION.

THE STATION STAFF.

EDWARD T. FAIRCHILD, A.M., D.Pd., LL.D., *President.*
JOHN C. KENDALL, B.S., *Director.*
F. W. TAYLOR, B.Sc. (Agr.), *Agronomist.*
FRED RASMUSSEN, B.S.A., *Dairyman.*
B. E. CURRY, A.B., *Chemist.*
W. C. O'KANE, A.M., *Entomologist.*
J. H. GOURLEY, M.S., *Horticulturist.*
K. W. WOODWARD, A.B., M.F., *Forester.*
O. R. BUTLER, Ph.D., *Botanist.*
E. G. RITZMAN, B.S., *Animal Husbandman.*
W. H. WOLFF, M.S., *Assistant Horticulturist.*
T. O. SMITH, A.B., *Assistant Chemist.*
C. H. OTIS, Ph.D., *Assistant Botanist.*
J. B. SCHERRER, B.S., *Assistant in Vegetable Gardening.*
FORD S. PRINCE, B.S., *Assistant Agronomist.*
C. R. CLEVELAND, B.S., *Assistant Entomologist.*
HARRY P. YOUNG, B.S., *Assistant Agronomist.*
JAMES MACFARLANE, *Florist.*
A. W. GAMASH, B.S., *Assistant Forester.*

Assistants to the Staff.

MARTHA F. EMERSON, *Librarian.*
O. V. HENDERSON, *Purchasing Agent.*
BEATRICE M. RICHMOND, *Bookkeeper.*
LAURA B. BICKFORD, *Stenographer.*
ELIZABETH E. MEHAFFEY, *Assistant Librarian and Mailing Clerk.*
BEATRICE E. CARLISLE, *Stenographer.*

THE EXTENSION SERVICE.

GENERAL EXTENSION STAFF.

EDWARD T. FAIRCHILD, A.M., D.Pd., LL.D., *President.*
J. C. KENDALL, B.S., *Director of Extension Work.*
J. B. ABBOTT, M.S., *State Leader, County Agent Work.*
W. P. DAVIS, *In Charge Dairy Cow Test Association Work.*
C. L. LONG, M.S., *In Charge Orchard Demonstrations.*
R. E. BATCHELDER, B.S., *In Charge Movable Schools.*
SARAH L. BATES, *In Charge Extension Work in Home Economics.*
L. A. CARLISLE, B.S., *In Charge Boys' Club Work.*
MARY L. SANBORN, *In Charge Girls' Club Work.*
E. M. STRAIGHT, B.S.A., *In Charge Vegetable Garden Demonstrations.*
M. C. WILSON, *Farm Management Demonstrator.*
B. B. RICHARDSON, B.S.A., *Assistant in Boys' Club Work.*

County Agents.

H. N. WELLS, *County Agent, Sullivan County.*
F. N. DARLING. B.S., *County Agent, Cheshire County.*
E. T. LEWIS, *County Agent, Coös County.*
A. B. PIKE, *County Agent, Belknap County.*
A. G. DAVIS, *County Agent, Merrimack County.*
R. D. LONG, B.S., *County Agent, Rockingham County.*
A. W. BENNER, *County Agent, Grafton County.*

Assistant to the Staff.

JANET E. McDONALD, *Stenographer.*

HISTORICAL SKETCH.

The New Hampshire College of Agriculture and the Mechanics Arts was created by an act of the New Hampshire legislature in 1866 and was established at Hanover as a state institution, in connection with Dartmouth College. In its foundation the state legislature had accepted the conditions of an act of the federal congress of July 2, 1862, entitled "An act donating public lands to the several states and territories which may provide colleges for the benefit of agriculture and the mechanic arts." The state had accepted the land grant three years earlier, July 9, 1863.

In 1893 the college was moved from Hanover to Durham. This action followed the death of Benjamin Thompson of Durham, a farmer, who died January 30, 1890, and left his entire estate, with a few minor reservations, to the college. The legislature accepted this bequest March 5, 1891, and appropriated the necessary money for the first buildings.

Mr. Thompson wrote in his will, "My object being mainly to promote the improvement of agriculture, though willing that the college to be established should also provide for the mechanic arts, it is my will that the institution to be established by the state . . . shall be called and designated . . . The New Hampshire College of Agriculture and the Mechanic Arts, if that shall be the wish of the state; and that in addition to the instruction to be given therein, as provided by my said will, there shall be taught only such other arts or sciences as may be necessary to enable said state to fully avail itself of said donation of lands by the government in good faith, which two branches of instruction shall be the leading objects of said institution or college."

Shortly before the state accepted this bequest of Mr. Thompson the legislature further provided for the college by accepting the provisions of an act of congress known as the

Morrill Bill. This legislation made available federal appropriations "for instruction in agriculture, the mechanic arts, the English language, and the various branches of mathematical, physical, natural and economic science, with special reference to their applications in the industries of life, and to the facilities for such instruction."

Although the college was able to make use of the Thompson land as early as 1893, it was not until 1910 that the income from this endowment of almost $800,000 became available. At present the college has an annual income from the Thompson funds of nearly $32,000, the moneys which are available as the result of the acts of congress referred to, and the biennial appropriations of the state legislature.

The college administration is in charge of a board of thirteen trustees. The governor of the state and the president of the college are *ex-officio* members; the college alumni elect two, and the others are appointed by the governor with the advice and consent of the council.

A branch of the college, known as the New Hampshire Agricultural Experiment Station, was established by the state, August 4, 1887, under an act of congress of March of that year. Its purpose is to acquire agricultural knowledge and to bring its information to the people of the state. The station is actively engaged in this work not only in Durham but throughout the commonwealth. Members of the agricultural faculty of the college serve on the station staff. There is also an extension department with a staff of nineteen who are devoting their entire time to demonstration work on the farm, in the home and to agricultural clubs.

When the college came to Durham it had but twenty-seven students and a faculty of but thirteen members. At present its students number six hundred and fifty-three and its faculty fifty-seven. Its growth, at first slow, has been constant always, and in the last three years the college has about doubled the number of its students and greatly increased its equipment.

GENERAL INFORMATION.

Situation.—Durham, the home of the college, is on the Portland division of the Boston and Maine railroad, sixty-two miles from Boston and five miles from Dover.

Courses.—The college is a part of the public school system of the state, continuing the work of the high school, and it is open to both men and women. In accord with the origin and function of the college, its courses are essentially practical, leading directly to the student's preparation for a successful livelihood.

I. Agricultural Division.

a. Four-Year Courses.
1. Animal Husbandry and Dairying.
2. Forestry.
3. Horticulture.
4. General Agriculture and Agricultural Teaching.

b. Two-Year Course in Agriculture.

c. Five-Week Course in Dairying.

d. Four One-Week Winter Courses in Agronomy, Forestry and Horticulture.

e. Farmers' One-Week Course.

II. Arts and Science Division.

a. Four-Year Courses.
1. General Arts and Science.
2. Home Economics.
3. Mechanic Arts for Teachers.

III. Engineering Division.

a. Four-Year Courses.
1. Chemical Engineering.
2. Electrical Engineering.
3. Mechanical Engineering.

b. Two-Year Courses.
1. Industrial Electricity.
2. Industrial Mechanics.

STUDENT EXPENSES.

	Women.	Juniors.	Sophs.	Fresh.	1st 2-yr.	Student Average.
Room rent	$57.00	$68.55	$50.83	$48.81	$44.71	$53.88
Board	136.59	152.20	145.00	148.03	114.03	145.05*
Books, stationery	15.47	19.90	15.67	16.20	18.59	17.19
Laboratory fees	4.50	5.21	7.70	4.00	2.30	3.61
Laundry, pressing, mending	3.00	8.50	13.70	8.28	6.02	8.15
Incidentals, Coll. activities	31.33	26.62	21.75	20.58	8.86	20.30
Athletics	2.93	5.07	4.54	3.83	3.78	4.00
Traveling expenses	21.33	25.00	20.95	20.56	30.13	23.77
Clothing	64.90	34.71	44.00	42.17	31.46	43.84
Other expenses	20.31	50.33	20.25	19.45	27.31	22.90
Total	$357.36	$396.09	$344.39	$331.91	$287.19	$342.69*
To this should be added:						
Tuition	60.00	60.00	60.00	60.00	60.00	60.00
Fees	20.00	20.00	20.00	20.00	20.00	20.00
Military uniforms, new men				19.00	19.00	
Total expenses	$437.36	$476.00	$424.39	$430.91	$386.19	$422.69*

The above tabulation of student expenses is a serious attempt on the part of the college to inform prospective students and their parents as accurately as possible concerning this very important consideration connected with a college course. The tabulation is based upon the actual experience of a number of students from each of the named classes, carefully chosen in order that a normal expenditure per student in any group might be obtained. Ten questions were asked of each one and the replies averaged to secure the results shown in the table. This list of questions included traveling expenses, and an item for clothing, which were asked not because these expenditures are at all uniform as between individuals, but rather because the college realizes that they are important items to take into consideration when planning for a year's expenses. These are usually not included by colleges in similar statements. When comparing expenses at New Hampshire College with other institutions, approximately $70 should be deducted from the average of $422.69, in order to reduce it to the same

*These averages are for four-year students. Averages for two-year men who are here a shorter time and whose expenses for board are less, are not taken into the computation.

basis. This may be further reduced by $60 for such students as secure scholarships.

Tuition and Fees.—Tuition is $60 a year; incidental fees are $20 a year. They are payable in advance in two equal instalments, one on the first day of each semester. By vote of the trustees, all members of the senior class are assessed a graduation fee of $5.00. Fees for supplies and breakage are assessed in chemical and other courses as the facts warrant.

Dormitories.—The college has two dormitories for women and one for men. All rooms are heated, lighted and furnished with the exception of bed linen, quilts and towels, which are provided by the individual students. In most cases, two students occupy a room or suite of rooms. Prices range from $50 to $80 for each student per year. Applications for rooms in the dormitories should be made directly to Mr. O. V. Henderson, business secretary of the college. Early application is necessary in order to secure a choice of rooms. Rooms in private families may be secured for about the same prices as for those in dormitories. Less desirable, but comfortable rooms may be obtained by men in several private dormitories at a somewhat less figure.

Women students, unless living at home, are required to room in one of the women's dormitories, or in approved houses. Each dormitory is equipped with a laundry for the use of the girls.

Board.—All women students board at Smith Hall, paying about $4 per week. The men board in clubs at prices ranging from $4 to $5 per week.

Scholarships.—Scholarships are awarded each semester for the purpose of aiding deserving students. Recently, the large increase in student attendance has utilized to the full all scholarships thus far provided. However, the trustees are anxious to supply scholarships to all really needy young men and women in New Hampshire. In order to do this, they necessarily require full information of all applicants in order that those able to pay may yield to those not so favorably situated.

These scholarships will be forfeited at any time for misconduct, or for the use of intoxicating liquor or tobacco. They will also be withdrawn from students in all four-year courses who fail to secure an average grade of sixty in any one semester, and, only in cases of special financial necessity, will they be restored by the president.

Conant Scholarships.—There are twenty-seven Conant scholarships, each paying tuition, $60; fees, $20; cash, $20,—total, $100. These are assigned under the following conditions:

They are to be given to young men taking agricultural courses.

Each town in Cheshire County is entitled to one scholarship, and Jaffrey is entitled to two.

They will be reserved for their respective towns until August 1 of each year. Those not taken by students from Cheshire County, and those in excess of the number of towns, will then be assigned to agricultural students from other parts of the state, and may be divided at the discretion of the president.

Senatorial Scholarships.—There are twenty-four senatorial scholarships, one for each senatorial district. Each scholarship is to pay tuition of $60, and when released is at the disposal of the senator from that district. Senatorial scholarships are open to residents of the state and to students in all courses.

Grange Scholarships.—For several years a scholarship paying tuition of $60 has been placed at the disposal of each subordinate and Pomona Grange in New Hampshire, for the use of a four-year or two-year student. When vacated by graduation or otherwise, the grange may assign the scholarship to another applicant. Each scholarship is to pay the tuition of $60. The method of appointment is entirely at the option of the grange; it may be by election, competitive examination, or otherwise. Holders of these scholarships need not be members of the grange, but must be resident within the state.

Valentine Smith Scholarships.—Through the generosity of the late Mr. Hamilton Smith of Durham, the sum of

$10,000 has been given to the college to establish the Valentine Smith scholarships.

"The income thus accruing to the college shall be given to the graduate of an approved high school or academy who shall, upon examination, be judged to have the most thorough preparation for admission to the college; *provided*,

"That if the student receiving this scholarship shall at any time prove unworthy, in the judgment of the faculty, by reason of defective scholarship or character, he shall forfeit his claim to the student most deserving; and

"That if the student receiving this scholarship shall cease to be a member of the college, the income from this fund, for the unexpired term, shall be awarded to the student most deserving in character and scholarship."

By vote of the faculty, these scholarships will be forfeited by failure to obtain an average grade of 75 per cent. for any semester. These scholarships yield $400 annually or one hundred dollars to each holder. Competitive examinations for this scholarship will be held June 27, 28, 29, 30, 1916, in Durham, Keene, Laconia, Lancaster, West Lebanon, and Manchester. Examinations are not restricted to citizens of New Hampshire. For examination schedule see page 41.

State Scholarships.—By an annual scholarship appropriation of $3,000, the state provides free tuition for fifty New Hampshire students. These scholarships are awarded strictly on the basis of financial need. Applicants must furnish full information in relation to their own financial status and that of their parents.

Prizes.—*Bailey Prize.*—Dr. C. H. Bailey of Gardner, Mass., and E. A. Bailey, B.S., of Keene, N. H., offer a prize of ten dollars for proficiency in chemistry.

Erskine Mason Memorial Prize.—Mrs. Erskine Mason of Stamford, Conn., has invested one hundred dollars as a memorial to her son, a member of the class of 1893, the income of which is to be given, for the present, to that member of the senior class who has made the greatest improvement during his course.

Chase-Davis Memorial Medals.—In the spring of 1909 the Glee Club voted to present a gold and a silver medal yearly to the college in memory of Carl Chase, '09, of Webster, an enthusiastic member of the New Hampshire football team and the Glee Club, and of John Worthen Davis, '11, of Concord, who were drowned in Great Bay, December 7, 1908.

According to the terms of this gift, the gold medal is to be awarded to the senior who has won an "N. H." and stands highest in his studies, and the silver medal is to be awarded to the senior who has won an "N. H." and stands second in his studies. These medals are for excellence in athletic competition primarily, and the number of times a man wins an "N. H." during his college career shall be of importance in making the award.

Individual Drill Prizes.—First—A gold medal given by the college. *Second*—A silver medal given by the college. *Third*—A bronze medal given by the college.

Junior Officer's Prize.—A saber, with belt complete, given to the junior cadet officer who excels in executing certain required movements or evolutions with a company.

Chi Omega Prize.—The Chi Omega Sorority of New Hampshire College offers a prize of ten dollars for the best thesis on a sociological subject written by a woman student in sociology 52, 54, or 58.

Lillian S. Edwards Prize.—A fund has been provided by Mrs. Lillian S. Edwards of Sanbornville for the publishing and distribution of the best thesis on a sociological subject written by a student for the Department of Sociology during the second semester of the college year 1915–1916.

College Aid to Students.—Students obtain considerable financial aid by janitorships, by table work at boarding clubs and by work on the farm and in the greenhouse. They also find employment with the power and service department of the college and with the experiment station. However, so much depends upon the individuality of the student that the college can guarantee absolutely nothing in any particular case.

Students may purchase at cost all books, drawing instruments, materials, etc., at the college book-store in Thompson Hall.

Registration.—Undergraduate students are required to register before 4 p. m. of the first day of each semester. For the first time in the history of the college, arrangements have been made to register by mail during the summer, so that a student may attend to this matter before returning in the autumn.

Registration will open on July 1, and continue until the beginning of the school year. Students desiring to register by mail or in person after July 1, should write the registrar for registration blanks, which when filled out should be forwarded to the business secretary together with the student's remittance for his semester's tuition, and fees.

Any former student who registers after the first day of a semester will be charged for such registration a fine of one dollar for the first day and fifty cents additional for each succeeding day, to be remitted only by the president upon presentation by the student of a substantial excuse for delay.

Warnings are Reports of Standings.—At the end of the first five weeks of the first semester new students are warned officially by the registrar of all studies in which their work has been unsatisfactory. Warnings of unsatisfactory work are also sent to all students near the middle of each semester. When a student has received warnings in more than seven hours of work in any semester, his parents or guardians are also notified.

Reports of standing are sent to parents and guardians at the close of each semester.

Attendance at Convocation, Military Drill and Physical Culture Classes.—Attendance at convocation is required of all students. Attendance at military drill is required of all men and at physical culture classes of all women unless members of the senior class or unless excused on account of physical disability. Certificates of disability must be

obtained of the physician designated by the college, and must be renewed annually.

Military Department.—This department is in charge of an officer of the United States regular army, detailed by the War Department, as a professor of military science and tactics. Military instruction, which is required by law, is both theoretical and practical, the former having special reference to the duties of the line.

The organization is a regiment of two battalions of three companies each, having a band, signal detachment, and officered by cadets selected for character, soldierly bearing, and efficiency. The federal government has furnished U. S. magazine rifles, model 1898, and equipment. Attention is paid to rifle pratice, the government supplying ample ammunition and target materials, and the college a range within four minutes' walk of the college buildings, with firing points at 200 and 300 yards. The rolling country in the vicinity of the college furnishes opportunities for extended order drill and field exercises, the athletic field for close order drills, and the gymnasium gives room for indoor work.

The cadets wear when on duty, and may at other times, an olive drab cloth uniform as prescribed by standing orders in the War Department. The cost of a uniform for the new student is $19.00 not including shoes, and its use may make possible a saving in civilian clothing.

Service in this department is optional for members of the senior class. Seniors who elect drill and are appointed cadet officers have their college fees refunded at the end of the semester if their work has been satisfactory. Seniors who elect drill and are not appointed cadet officers are not required to be armed or to drill in the ranks, but will attend all drills and perform such duties as may be required of them.

Upon the graduation of each class the names of those students who have shown special aptitude for military service are reported to the adjutant-general of the army and to the adjutant-general of the state, and they receive a special certificate for military proficiency.

BUILDINGS AND EQUIPMENT.

BUILDINGS.

The college is housed in twelve large buildings scattered over a handsome campus. Of these buildings, six are devoted to offices, recitation rooms or laboratories; one is the large armory and gymnasium; two are dormitories for women; one the new dormitory for men, one the library, containing the books of the college and the town of Durham, and one the home of the experiment station. Besides these there are the college barn, several smaller barns, an insectary, a poultry laboratory, poultry houses, and a range of greenhouses.

Fairchild Hall. The latest addition to the college buildings is the $60,000 dormitory for men. This building, named in honor of the president of the college, is a handsome brick structure of colonial design, which furnishes accommodations for 106 men.

No item of necessary dormitory equipment has been forgotten. There are shower baths on each floor and some suites have private toilets. A large general assembly room has been provided for the use of the occupants of the building. The student rooms are furnished, heated and lighted and are cared for by a competent assistant. They are arranged mainly in suites consisting of chamber and study.

Thompson Hall is the main administration building and from its eminence commands a view of the entire campus. It contains besides recitation rooms the offices of the president, the dean, the registrar, the business secretary, the bookstore, and the headquarters of the departments of modern languages, mathematics, zoölogy, economic entomology, and home economics. The third floor has been recently fitted up as a gymnasium for women.

DeMeritt Hall, the new engineering building, was completed in 1914 at a cost of $80,000. It is the most prominent of the engineering group and houses the departments of mechanical engineering, electrical engineering, physics, and drawing. It contains lecture, recitation, drawing, and office rooms for the several departments; also numerous electrical, mechanical and physical laboratories, each one adapted to and equipped for its specific work.

Conant Hall is devoted exclusively to the department of chemistry. The second floor, containing lecture rooms and three laboratories, remains substantially as it has been for a number of years. The first floor has been recently fitted up with modern chemistry desks and other equipment to supply much needed additional laboratory facilities for chemical students. The building is thus well equipped for carrying on the chemical courses of the college, including those connected with agriculture, home economics, and chemical engineering.

Morrill Hall is the headquarters of the agricultural department of the college and also has the office of the director of the experiment station and the experiment station library. In this building are the laboratories and lecture rooms of the departments of agronomy, animal husbandry, horticulture, poultry husbandry, and forestry. The building also contains a collection of farm implements and a cattle judging room. The third floor has been finished off and now provides quarters for agricultural extension workers; a reading room for agricultural students and The Agricultural Club Room.

Nesmith Hall is occupied by the departments of chemistry and botany of the experiment station and contains the laboratories and lecture rooms of the department of botany of the college.

The Shop Building contains a wood shop, a machine shop, a forge shop, a foundry, the boiler house, and a general repair shop connected with the curator's department.

The Armory contains the lecture rooms and offices of the military department, the rooms of the College Club and a large drill hall and gymnasium.

The Dairy Building is arranged and equipped in the most up-to-date and sanitary manner. It contains a commercial creamery, with sanitary milk room, separator room, churning room, and cold storage room; laboratories for instruction in milk testing, milk inspection, farm butter and cheese-making, and bacteriology; a reading and exhibition room; class room, and offices.

Smith Hall and Ballard Hall are the two dormitories for women, each under the supervision of a competent matron. Smith Hall was made possible by the generosity of Mrs. Shirley Onderdonk, of Durham, who gave $16,000 as a memorial to her mother, Mrs. Alice Hamilton Smith. The remainder of the cost, $10,000, was provided by the state. The building has rooms for thirty-two girls, dining accommodations for seventy-five, and a large reception room which provides a social centre for the occupants.

Ballard Hall was formerly a privately owned fraternity house, the largest in Durham. It has been purchased by the college, remodelled, entirely refitted, and furnishes accommodations for forty-five girls. There is a reception room and a large music room for social use.

The Library. In accordance with an act of consolidation between the libraries of Durham and the college, the books of the Durham public library and the college are all shelved in one building, forming the Hamilton Smith Public Library. This consolidation makes an especially good collection, the scientific books of the college supplementing well the more popular books of the town library. The consolidated libraries number about 35,000 volumes and the reading room is supplied with 100 periodicals. The departments of sociology, of history and political science, and of economics are located in the library building.

Aside from the main library, each department has its working library of the more technical books and journals.

EQUIPMENT.

Agronomy.—For the teaching of farm equipment and machinery, this department is provided with drainage levels for laying out drains, plane tables for making farm maps, polar planimeters for measuring plotted areas, a dynamometer and several other pieces of apparatus for studying draft problems. For farm crops work it has a very complete collection of dried specimens of the different forage crops, and the more important varieties of corn, wheat and oats. Seed testing apparatus, grass charts and other illustrative material form a part of the equipment.

A new combined lantern and reflectoscope, together with a large number of lantern slides, has recently been installed in the lecture room.

The soil physics laboratory is equipped with soil bins, a compacting machine, chemical and torsion balances and various kinds of physical apparatus for the study of soils, including that for the determination of specific gravity and for the making of mechanical analyses.

The agricultural museum contains the old original "Daniel Webster plow" and other primitive models. It also contains many of the latest types of farm machinery, including plows, cultivators, harrows, mowers, planters, corn and grain binders, gasolene engines, a thresher, manure spreader, etc., also different kinds of cattle ties, and various makes of woven wire fences.

The college farm, with its 385 acres of land, has a variety of soils suited for the growth of many farm crops. Land on nearby farms is rented for the growing of corn and potatoes so that good opportunities are afforded for practical work and demonstration in the production of field crops.

Animal Husbandry.—For the various courses in animal husbandry an extensive use is made of the live stock of the college farm. The dairy herd consists of representative

animals of the following breeds: Ayrshires, Guernseys, Jerseys and Holsteins. The college owns nine horses representing the draft type, and in order to become acquainted with the carriage and roadster types, the students are taken to various stock farms where these types may be inspected and judged. For the study of the different breeds of sheep, the experiment station flock is used. For the study of swine students are taken to nearby farms, since at the present the college owns no swine.

In the agricultural building a large room is fitted up for the judging of live stock, and score cards with a scale of points for each kind of animal are used.

The class room is provided with a stereopticon lantern and a large collection of lantern slides is used to show the leading individuals of the different breeds of live stock. The herd books of the most prominent breeds are used for the purpose of familiarizing the student with methods of tracing pedigrees and the practices of breeders' associations.

Poultry.—As a result of a special appropriation by the legislature several years ago, a poultry plant has been established. This consists of a number of colony houses, two permanent houses and a laboratory building containing an incubator cellar and killing and dressing room. There are about 400 birds representing the following breeds: Barred Plymouth Rocks, Rhode Island Reds, White Leghorns and Light Brahmas. Students are given practical instruction in judging the various breeds, handling of incubators and construction of poultry houses.

Botany.—The department of botany has the usual laboratory equipment to meet the needs of the courses in general botany, plant physiology and bacteriology. In the advanced courses, owing to the connection of the department with the experiment station, students will find both the laboratory and greenhouse equipment ample for critical studies on plant diseases and plant nutrition.

Chemistry.—The several chemical laboratories are fairly well equipped. Each is supplied with most of the forms of

apparatus required for its particular work. Besides all necessary glass and porcelain ware, this includes water baths, drying ovens, combustion, muffle and assay furnaces, platinum dishes and crucibles, polariscope, spectroscope, balances, lantern and other lecture appliances.

Dairying.—The dairy department, with its new dairy building, offers excellent opportunities for instruction in technical and practical dairy work. The college creamery is well equipped with up-to-date machinery, each machine being run by a separate electric motor.

In addition to the product of the college herd, milk and cream are received from over forty farms in Durham and vicinity. By this arrangement sufficient material is furnished for practical work. The farm dairy is equipped with the leading makes of hand separator and hand and small power churns suitable for private dairies. The milk testing and milk inspection laboratory is equipped with Babcock testers, sediment testers, acidimeters and other apparatus necessary for inspection of milk and cream for fat and other qualities. The Bacteriological Laboratory has the equipment necessary for work in dairy bacteriology.

Drawing.—The department of drawing is well equipped to meet the needs of the subjects offered. The drafting rooms are supplied with tables and lockers and the free-hand drawing studio with suitable stands and easels. For engineering and machine drawing there is an excellent collection of working models and machine parts, and various machines in other departments are available for this work. For free-hand drawing there is a good supply of geometric models, and for advanced work in charcoal drawing the nucleus of a good collection of plaster casts exists, consisting of historic ornament, details of plant and animal life and of the human form. For special work in this subject there is available the museum of casts, consisting of examples of antique and modern sculpture.

Electrical Engineering.—The laboratory for electrical engineering occupies the ground floor of the south end of

the new engineering building. It has a total area of about 4,500 square feet. There is one room 104 by 36 feet for dynamo electric machinery. In this main dynamo room there is a large new distributing switchboard, on which are mounted instruments, switches, circuit breakers, ground detectors, synchronizers and plugging devices so arranged that it is possible to connect the various rooms and convey thereto direct current and single, two-phase and three-phase alternating current of different voltages and frequencies.

In addition to this main dynamo room there is a room used for photometry, one for storage battery and one for high potential experiments. The laboratory also includes an instrument room, a mechanician's room and a dark room.

The general equipment of the laboratory includes various dynamos and motors for both direct and alternating currents, several transformers, the necessary measuring instruments and storage batteries, adapted to the needs of students taking this course.

In addition to the regular laboratory equipment, there is available for testing purposes a fully equipped sub-station having a capacity of 75,000 watts supplied by the Rockingham County Light and Power Company, of Portsmouth, N. H. A part of this equipment consists of an automatic induction feeder regulator, including contact making voltmeter and reversing switch.

Farm Department.—An institution like New Hampshire College is not complete without a well-equipped, well-organized and properly managed farm. The farm serves as a laboratory for much of the agricultural instruction, where approved farm methods in practice may be seen and where the students may gain experience by actually performing the work with their own hands.

The New Hampshire College farm comprises about 385 acres, of which about 100 are in forest and woodland; about 45 are occupied by the campus and athletic field; about 95 are tillage land; and about 145 are pasture land. Twenty-four acres of the pasture land are occupied by the animal husbandry department of the station and about 16 acres by

the college reservoir. Twenty-two acres of the tillage land are used by the horticulture, agronomy and animal husbandry departments of the station.

Two farms, one comprising about 40 acres of tillage land and 160 acres of pasture, the other about 30 acres of tillage and 40 acres of pasture are rented by the farm department.

The farm buildings consist of a large storage barn, two 125-ton silos, a well-appointed, sanitary dairy stable which will accommodate 38 cows, and a basement under the main barn for housing young stock and dry cows. A building 60 by 18, with individual yards, has been erected for caring for the herd bulls. A horse barn 36 by 67 with basement and hay storage loft is occupied by the farm and horticulture departments.

Forestry.—The demand for instruction in forestry at the college has been increasing from year to year and the legislature of 1911 provided for a separate department of forestry. It is now possible to educate and, in a measure, train agricultural students in scientific forestry. The course is intended to provide not only a special training in forestry, but a broad general training in other lines of agriculture closely related to it. For those who desire to make forestry their life work, every encouragement and assistance will be given. Additional work at some graduate school of forestry is now almost a necessity, owing to the large number of men entering the profession today.

Durham is well situated with reference to the study of woodlot forestry. All types of native second-growth forests are found nearby and the college owns a tract of 60 acres of old-growth timber where exceptional opportunities are given for the study of mature forests. There are other areas where practice will be given in establishing plantations of forest trees by various methods. A nursery for the growing of seedling forest trees has been established.

All the necessary instruments for making forest maps and measurements, together with collections of wood specimens, lantern slides and photographs, are available in connection with this work.

Home Economics.—The home economics department is located in two large rooms in Thompson Hall. The food laboratory, is fitted with work desks, storage cupboards and apparatus for cooking. The desks are built in cabinet form to hold the necessary utensils and materials for each student. Each table is fitted with both gas and electric stoves and ovens.

The cooking utensils are of the materials best suited to the use of each. Standard measuring apparatus and scales are provided.

A storage cabinet is provided with bins for supplies and cupboard space for large utensils.

The sewing equipment consists of sewing machines, cabinets, tables, and dress-forms.

Various educational exhibits, both food and textile, are owned and used by the department for illustrative purposes.

The reference library of books, bulletins and journals is deposited partlv in this room and partly in the main library.

Mechanical Engineering Department.—The main office of the Mechanical Engineering department is located on the second floor of DeMeritt Hall. On this floor is the drafting room equipped with twenty-four drafting tables, where the advanced work in drawing and design is given. In addition there are two lecture rooms with a seating capacity for twenty-five students. One of the lecture rooms being equipped with a stereopticon lantern and screen so that illustrated lectures may be given in various subjects.

In the basement of the building is located a Mechanical Engineering laboratory the north end of which is given over to a stock and instrument room and a materials testing room. This latter room contains a 50,000-pound Riehle tension testing machine, a machine for transverse testing materials, a Fairbanks cement testing machine, a chemical balance and instruments for making analytical tests of fuel, oil, and gas.

The main room is given over to steam, gas, and hydraulic testing. The present equipment consists of a 12-horse

power 4-cycle gasolene engine, also a 5-horse power 2-cycle gasolene engine, Westinghouse air compressors, condenser and pumps, a Westinghouse single acting steam engine, a 10-horse power high-speed steam engine, a wier tank, platform scales and tanks for weighing of water. This equipment will be added to from time to time. In addition to this equipment we have a supply of steam engine indicators, gas engine indicators, gages and thermometers, pyrometers and other small apparatus.

Physics.—Besides the necessary furniture the department is supplied with the usual small tools, calipers, scales, balances, weights, hydrometers, calorimeters, thermometers, etc., and with other apparatus for the performance in the laboratory of experiments in mechanics, heat, sound, light, magnetism and electricity.

The lecture room has a small but growing collection of apparatus for the illustration, both experimentally and with the projection lantern, of the laws of matter and energy in their various relations, and of the history of physics.

Instruction is carried on by means of lectures, with mimeographed outlines furnished to students and constantly kept up to the development of the subjects; recitations and discussions based on standard text-books, and experimental work in the laboratory. Mimeographed outlines are furnished for the laboratory experiments, with concise directions and references; and reports are written by the students on the results of their experiments, for examination and criticism by the teacher.

The physics department occupies all of the west wing of the new engineering building. In the basement there are a large laboratory room for intermediate work in subjects yet to be developed, two small rooms for individual work, a switchboard room, a room for storage battery and for chemical work, and a storage room. On the first floor are the general elementary laboratory, partly divided off into small rooms for work in light or for balances, a room for apparatus storage, the office and a recitation room. On the second floor are the lecture room and a room for the storage of lec-

ture apparatus. The lecture room will seat about one hundred.

Shopwork.—The wood shop is equipped with thirty-three benches and complete sets of tools for 160 students. Each bench is equipped with modern vises. Other equipment consists of a universal pattern maker's saw, board-planer, buzz-planer, band saw, speed-lathes and a large pattern maker's lathe with boring attachment.

The equipment of the machine shop consists of engine lathes, speed-lathe, vertical drill, planer, large universal milling machine, plain milling machine, shaper, power hack saw, tool grinder, twelve benches with vises and bench lathes; and a large number of small tools, including micrometers, calipers and gages necessary for accurate work.

In the forge shop are seventeen Sturtevant down-draft forges with anvils and necessary tools. The blast to the forges is furnished by a No. 4 blower, and the smoke carried away by a 60-inch exhauster. These are driven by a small steam-engine.

All the shops are operated by 550-volt three-phase induction motors, suitably connected to line shafting and driving the tools by the "group plan."

Zoölogy.—This institution is favorably situated geographically for the study of zoölogy. Within a few minutes' walk of the laboratory is the Oyster river where it meets the tide water from Great Bay. This furnishes a gradation of salt, brackish and fresh water with an abundance of their characteristic fauna. Great Bay, the Piscataqua river and the open ocean are within easy access, and have their own peculiar, characteristic forms. On the other hand there are numerous bodies of fresh water, with typical fresh water forms.

The department of zoölogy is prepared to offer courses along the following lines: (A) systematic zoölogy; (B) physiology and sanitation; (C) philosophical zoölogy; (D) anatomical zoölogy.

The equipment for the work in systematic zoölogy consists of a well-lighted laboratory, provided with tables, charts, dissecting and compound microscopes. All of the latest books and periodicals on systematic zoölogy are at the student's disposal. The lecture room is fitted with a new reflectoscope capable of projecting opaque objects, text-book figures or lantern slides. The room has a seating capacity of eighty, and is provided with armed chairs which enable the students to readily take down notes and drawing. There is a fairly complete collection of local invertebrates, and a very good collection of the birds of New Hampshire. The work in systematic entomology is greatly aided by a large and complete collection of insects which is the property of the experiment station.

The proximity to both salt and fresh water renders the work in advanced systematic zoölogy unusually attractive. In addition to the regular collecting equipment, nets, aquaria, etc., advanced students also have the use of row-boats and a gasolene launch.

In the work in physiology, hygiene and sanitation the department is provided with an unusually fine collection of injected preparations of the human body, and with numerous charts. The same laboratory and equipment is used in this work as noted above.

For work in evolution and experimental zoölogy the department has a very complete library. Studies in ecology in Great Bay and vicinity are encouraged, for which purpose the students have the use of a camera equipment. In addition to the study of evolution under natural conditions the department also furnishes aquaria for laboratory study and experiments.

The work in anatomical zoölogy is greatly facilitated by an abundance of fresh material which may be collected as needed. For the study of human and comparative anatomy a full set of skeletons and preserved material is provided. Students interested in histology have access to a private collection of some two thousand microscope slides.

Museum.—The museum had for a nucleus the collection made during the state geological survey. To this additions have been made from various sources. Specimens are being collected to illustrate the zoölogy of New Hampshire, and New Hampshire collectors and naturalists are invited to make the museum the permanent depository of their collections.

FOUR-YEAR COURSES.

AGRICULTURAL DIVISION.

The courses of this division are designed for the general education and scientific training of students in the various economic branches of agriculture. The lecture and recitation work of the classroom is supplemented largely by practical exercises in the laboratories. Seminar studies are also given, especially for seniors and advanced students. The whole curriculum is so arranged that about one third of the studies may be termed cultural, one third, scientific, and one third, technical. During junior and senior years the student has elective options in certain courses of study which enable him to specialize in animal husbandry and dairying, horticulture, forestry or general agriculture.

While the two-year course is intended to give the student as thorough training in the science and practical details of farm operations as the time will allow, it does not give the opportunity for a broad general foundation of pure and applied science that the four-year courses afford; the latter courses aim primarily to combine a college education with that of a technical vocation. Many of the graduates of the four-year courses return to the farm for the purpose of putting into practice the knowledge and training of their college work, and many of them are becoming successful and prosperous citizens of the community; others who have no farms of their own accept salaried positions as superintendents or foremen on the dairy, fruit or truck farms of large owners; still others take positions as teachers of science and agriculture in our secondary and high schools or as assistants in our agricultural colleges and experiment stations.

The Agricultural Division offers the following four-year courses of study:

Animal Husbandry and Dairy Course.—This course is designed for those students who wish to specialize either in animal husbandry or dairying. Election of subjects between these two departments may be made throughout the junior and senior years. The dairy building with its new and complete equipment, together with the additional subjects and increased facilities for instruction in the animal husbandry department, make this course especially attractive.

Forestry Course.—The forestry course offers to students who have entered the agricultural division an opportunity to specialize in forestry during the junior and senior years. This arrangement allows the student to devote a large amount of time to the various branches of forestry, but at the same time requires a foundation of agriculture and the subjects upon which agriculture depends. The forestry department is located on the second floor of Morrill Hall. The college forest of sixty acres of old-growth pine and hemlock, and other areas of natural and planted growth, furnish the laboratory for the forestry student. Ample opportunity is given to study the various forest problems on the ground as well as in the classroom.

Horticultural Course.—This is the course for those students who contemplate making a speciality of some line of horticultural work. Several advanced subjects in botany will be required, while during the senior year opportunity will be given to elect subjects in other departments. The horticultural department is well equipped with gardens, orchards, greenhouses and laboratories for the study of the different phases of this industry, especially fruit growing, which is so prominent in the agriculture of the state.

General or Teaching Course in Agriculture.—This course is intended for students who desire to secure a general training in the science of agriculture without specializing along some particular line. Provision is made during both the junior and senior years for the student to elect one or more subjects in whatever department he wishes.

The rapidly increasing demand for teachers in agriculture in our secondary schools has indicated the necessity of training men especially for this important line of work.

Beginning with September, 1916, eight hours of work in the department of education will be required during the junior year and five hours during the senior year of all students in the General or Teaching Course in Agriculture.

ARTS AND SCIENCE DIVISION.

In the Arts and Science Division the following courses are offered:

General Arts and Science Course.—This course provides a general college training which especially prepares for secondary school teaching, business or graduate study. By means of the group system of elective studies an opportunity is given the student to specialize in zoölogy, botany, chemistry, physics, drawing, agriculture, mathematics, modern languages, English, psychology, sociology, political science, economics, history, home economics, and education.

Home Economics Course.—The course in home economics furnishes instruction in the branches that especially serve the need of women students. The work is planned to meet the demands of the day for scientific training in home making, to fit students to enter fields of professional activity in educational and institutional lines of work, and to provide thorough training for those students who wish to elect home economics as either a major or a minor subject in the Arts and Science Course.

The technical work in household science is based upon the principles of physical, biological and social sciences. The subjects in foods, nutrition and dietetics require physics, chemistry and physiology; those in sanitation necessitate a knowledge of chemistry and bacteriology; home administration and the care and education of children, a knowledge of the principles of human nutrition and dietetics, principles of economics, psychology and sociology. The training in drawing, color, and design which is gained in the department

of drawing finds a worthy expression in the work in costume design and house decoration.

By the arrangement of studies, electives have been provided for in each year. The student is permitted three elective hours of work in the freshman year, six in the sophomore year, while more than half the total requirements for junior and senior years are electives. This large amount of elective work affords ample opportunity for the study of modern languages, history, mathematics, social and political sciences, or subjects of interest to women in other departments of the college. Provision is made for original problems in the senior year for students who are prepared for such studies.

Mechanic Arts Course for Teachers.—This course provides an opportunity for preparation for the teaching of Mechanic Arts and manual courses in secondary schools and institutions. It originated to meet the increasing demand for graduates of the college qualified to teach manual and mechanic arts courses. Although much of the work of this course is necessarily prescribed in such subjects as drawing, mathematics, shop work, English, psychology and education, a reasonable opportunity is given the student to elect other subjects in the Arts and Science Division. At the present time the demand for graduates from this course for secondary teaching is greater than the college can satisfy.

ENGINEERING DIVISION.

Chemical Engineering Course.—This course is intended to fit for the career of professional chemist or chemical engineer, and to give a good foundation for original and independent chemical research.

Instruction is imparted by lectures, recitations and a large amount of carefully supervised laboratory work. The laboratory study is largely an individual one and the work of each student is conducted with reference, not only to the particular object he may have in view, but also to the ac-

quirement of a broad knowledge of chemical science. The student is given a thorough training in German and French to enable him to read with ease the chemical literature; a thorough grounding in mathematics, necessary for advanced theoretical chemistry or chemical engineering; a somewhat limited amount of special engineering work, both mechanical and electrical; and a thorough undergraduate training in theoretical and applied chemistry. He is encouraged to develop the power of solving chemical problems by independent thought through the aid of the reference works and chemical periodicals which the library contains.

Electrical Engineering Course.—The electrical engineering course is intended to meet the demands of young men fitting themselves for practical and professional engineering in connection with the various applications of electricity.

By means of lectures, recitations and laboratory work, the subjects of the course are brought to the attention of the student in such a manner as not only to emphasize the present needs of the practitioner and engineer, but to give him the groundwork that will enable him to grasp and understand the constantly increasing number of problems that require solution.

The instruction aims to impart a complete practical and theoretical knowledge of the best modern types of electrical machines and appliances and the methods of designing, building and operating them.

The rapid progress in recent years in applying electricity to commercial uses renders it difficult, if not impossible, for one without a technical education to gain prominence in the work and be intrusted with its more responsible positions.

Mechanical Engineering Course.—The mechanical engineering course is intended to train young men for positions of responsibility in the field of the mechanical industries. The studies in the course are scientific, including mathematics, physics and chemistry; technical, including

drawing, shop work, thermodynamics, hydraulics, machine design, electrical engineering, power engineering, and cultural studies, calculated to enable the technical man to take his proper place in the world of men.

Instruction is given by means of text-book work and laboratory work whenever possible. When necessary this work is supplemented by illustrated lectures and assigned reading. Throughout the course the theoretical work is supplemented by actual practice in mechanical operation and scientific research, by training in the use of tools for working wood and metals, and by experimental tests and demonstrations in the mechanical, chemical and physical laboratories.

POST-GRADUATE AND SPECIAL COURSES.

The college offers opportunity for post-graduate study in agriculture, biology and chemistry, and on the completion of satisfactory work advanced degrees will be given. Persons of mature years presenting satisfactory evidence of their ability to complete any desired course of study may be admitted as special students by vote of the faculty.

METHODS OF ADMISSION.

The New Hampshire College will admit without examination all candidates for admission who are graduates of high schools or academies of New Hampshire that are approved by the State Department of Public Instruction, provided the division entrance requirements of the college be met.

Graduates of schools specially approved by the college, will be admitted on the same terms as graduates of approved schools in New Hampshire.

Graduates of other high schools and academies will be admitted on passing examinations in fifteen units. However, the college can not agree to give examinations in certain vocational subjects involving mainly practical work, but may require special certification in such subjects.

Cases not covered by the above statements will be decided by the entrance committee of the faculty.

Candidates for advanced standing are admitted on the basis of the work completed at the institutions from which they come.

DIVISION UNIT REQUIREMENTS.

There are three divisions of New Hampshire College; the Agricultural, the Arts and Science, and the Engineering. These divisions are defined and described elsewhere in this announcement.

An entrance unit represents one study of four or five recitations a week for one year. It is assumed that two hours of manual training or laboratory work are equivalent to one hour of classroom work.

Candidates for admission to the freshman class of the various divisions of the college must show evidence, either by credentials or by examination, that they are prepared in fifteen units as indicated in the following table:—

Required Units	Agricultural Division.	Arts and Science Division.	Engineering Division.
Group A English,	3	3	3
Group B Mathematics,	2	2	3
			Algebra 1 Plane Geom. 1 Additional 1
Group C Social Science and History,	1	1	1
Group D Natural Science,	1	1	1
	7	7	8
Elective Units	8	8	7
Total for admission,	15	15	15

Elective units may be offered from groups A, B, C, D, and also from

Group E Foreign languages, ancient or modern

Group F Vocational subjects: agriculture, commercial subjects, domestic arts, mechanic arts.

However, not more than four vocational units will be accepted.

The credentials to be rendered by principals must state the time of graduation, the subjects studied, the number of entrance units in each, the grades attained by the student, and the passing grade of the school.

The credential forms to be used will be furnished by the college on application to the registrar.

The study of algebra and plane geometry may be combined as in Myers' textbook provided two units are offered for the combined work.

A candidate for admission to the Arts and Science Division who offers two units in a foreign language may substitute for the two units required in mathematics two units in either social or natural science, or one in each.

Candidates for admission to the Engineering Division may offer solid geometry for a part of the additional unit in mathematics. This is not required, but is highly advisable. Students presenting solid geometry as a part of the fifteen units required for entrance will be obliged to take an equivalent in hours for solid geometry (Mathematics 53). Students presenting solid geometry in addition to the fifteen units required for entrance may obtain credit for solid geometry (Mathematics 53), by passing a thorough examination. For the required unit in natural science, physics or chemistry is advisable.

Entrance by Examination.—Examinations will be given in subjects named in the groups A–F, in June and September at the college and in June at the following places also: Keene, Laconia, Lancaster, Manchester, West Lebanon.

Competitors for the Valentine Smith Scholarship (see page 15) must take the examinations in the seven units required in all divisions and in eight other elective units. These examinations must be taken in June, and may be taken at any one of the places mentioned above.

Requests for examinations should be forwarded to the Dean at least one week before the beginning of the examination period, and must state the names and addresses of the students, the places at which they will present themselves, and the examinations desired.

SCHEDULE OF EXAMINATIONS.

Tuesday, June 27, 1916.
Tuesday, September 5, 1916.

Mediaeval and Modern History	English
Elementary Algebra	Plane Geometry

Wednesday, June 28, 1916.
Wednesday, September 6, 1916.

English History	Elementary Latin
Physics	Advanced Latin

Thursday, June 29, 1916.
Thursday, September 7, 1916.

Chemistry	French
American History	Advanced Algebra

Friday, June 30, 1916.
Friday, September 8, 1916.

Ancient History	German
Solid Geometry	Botany

Examinations not scheduled will be arranged.

ENTRANCE REQUIREMENTS.

GROUP A. ENGLISH.

(The new requirements in English as stated below will take effect in September, 1916. Previous to that date the requirements will be as stated in the college catalogue for 1915–1916, pages 33 to 37 inclusive.)

The examination paper in English will be based upon the principle that the way to learn to write is to read.

All candidates will therefore be required to write a series of short themes which will show an adequate knowledge and thorough appreciation of certain great English classics as literature—as "the life blood of the mind." The classics selected are as follows: Shakespeare's Merchant of Venice, Henry V, and Macbeth; one novel each by Scott, Dickens, George Eliot, Stevenson, Cooper and Hawthorne; one essay each by Macaulay, Ruskin and Lowell; the subject-

matter and nature of the poetry of Wordsworth, Byron, Tennyson, Longfellow and Whittier.

As a special test in spelling, grammar, punctuation and paragraphing, the candidate will be required to write a short theme upon some subject pertaining to the home or school life of the average high school senior.

An optional question will be offered for the purpose of discovering the candidate's familiarity with the best modern periodical literature.

GROUP B. MATHEMATICS.

1. **Elementary Algebra.**—The four fundamental operations for rational algebraic expressions. Factoring, determination of highest common factor and least common multiple by factoring. Fractions, including complex fractions, and ratio and proportion. Linear and quadratic equations, both numerical and literal. Problems depending on linear and quadratic equations. Radicals, including the extraction of the square root of polynomials and of numbers. Exponents, including the fractional and negative.

2. **Advanced Algebra.**—The formula for the nth term and the sum of the terms of arithmetical and geometrical progressions, with applications. The theory and use of logarithms, without involving the use of infinite series. The binomial theorem for positive integral exponents. Complex numbers, with graphical representation of sums and differences. Determinants limited to simple cases. The elements of the theory of equations.

3. **Plane Geometry.**—The usual theorems and constructions of good textbooks, including the general properties of plane rectilineal figures; the circle and measurement of angles; similar polygons; areas; regular polygons, and the measurement of the circle. The solution of numerous original exercises including loci problems. Applications to the measurement of lines and plane surfaces.

4. **Review Mathematics.**—A general mathematics review during half of senior year is recommended, especially for students preparing for college engineering courses. A certificate covering the work of not more than one unit will be accepted for entrance. No examinations will be given.

5. **Solid Geometry.**—The usual theorems and constructions of good textbooks, including the relations of lines and planes in space; the properties and measurement of prisms, pyramids, cylinders and cones; the sphere and the spherical triangle. The solution of numerous original exercises including loci problems. Applications to the measurement of surfaces and solids.

6. **Plane Trigonometry.**—The subject matter of plane trigonometry as presented in good textbooks, including the solution of trigonometric equations of a simple character, the use of trigonometric equations of a simple character, the use of logarithms, the solution of right and oblique triangles, and practical applications.

GROUP C. SOCIAL SCIENCE AND HISTORY.

This group includes history, political economy, commercial law.

Although there are excellent textbooks in history, adequate preparation cannot be obtained by textbook work alone. Some collateral work is necessary, whatever textbook is used, and with certain textbooks a large amount is necessary. The details of the preparatory work in history are fully stated in A History Syllabus for Secondary Schools, by the New England History Teachers' Association. Boston, D. C. Heath & Co., 1904. Details are also stated in Standard Program for the Secondary Schools of New Hampshire, Department of Public Instruction, Concord, N. H.

1. **Ancient History.**—This may include the earliest nations and the period to 800 A. D., or it may be limited to

Grecian History and Roman History to the fall of the Western Roman Empire.

2. **Mediaeval and Modern History.**

3. **English History.**

4. **American History and Civics.**—The work may conform to the course in American constitutional history described in the Standard Program or to the course in American history developed in nearly a hundred pages of the Syllabus. It is assumed that in any case a reasonable amount of time is to be given to the study of the Constitution of the United States.

5. **Political Economy.**—(1) The study of a standard text. (2) At least six topics investigated by outside reading.

6. **Commercial Law.**—(1) Study of a standard text. (2) The study of a total of not less than thirty-six specific cases.

GROUP D. NATURAL SCIENCE.

A notebook, carefully kept and examined by the teacher, is an essential part of all laboratory work in science.

1. **Botany.**—The work in botany should consist of (1) the study of a standard text; (2) four or five exercises per week, at least one of which should be laboratory work. Either half of a year or an entire year's work will be accepted.

2. **Chemistry.**—Elementary inorganic chemistry. Should cover the commoner nonmetallic and metallic elements with their most important compounds, together with an introduction to the general theoretical principles. Calculations based upon changes of gaseous volumes and chemical equations. A year's work of four or five exercises per week, at least one of which should be laboratory work.

3. **Physics.**—The standard work in physics should consist of (1) The study of a standard text; (2) not less than

forty experiments worked out in the laboratory by each student and properly recorded in a suitable notebook.

4. **Zoölogy.**—A study of the fundamental principles of animal structure and the dissection of type forms. The student should become familiar with the characteristics of the various phyla of the animal kingdom. Four or five exercises per week, at least one of which should be laboratory work. Either half of a year or an entire year's work will be accepted.

GROUP E. FOREIGN LANGUAGES.

1. **French.**—Work of the first year should include (1) careful drill in pronunciation, (2) drill upon the rudiments of grammar, (3) abundant translation of simple English prose into idiomatic French, (4) reading of from 100 to 175 pages of French prose, (5) writing French from dictation. Work of the second year should include (1) the reading of from 250 to 400 pages of easy modern prose, (2) constant practice in translating from English into French variations of the text read, (3) frequent paraphrases of the text read, (4) dictation.

2. **German.**—Work of the first year should include (1) careful drill in pronunciation, (2) drill upon the rudiments of grammar, such as the inflection of the articles, the common nouns, adjectives, pronouns, and strong and weak verbs, upon the uses of the prepositions, the modal auxiliaries, and the rules of syntax and word order, (3) writing from dictation, (4) the reading of from 75 to 100 pages of prose, (5) translation from English into German. Work of the second year should include (1) the reading of from 150 to 200 pages of prose, (2) constant practice in translating from English into German variations of the text read, (3) dictation, (4) continued drill upon the rudiments of grammar, (5) frequent paraphrases of the text read.

4. **Latin, Elementary.**—Grammar and four books of Caesar. Two years' work.

5. **Latin, Advanced.**—Virgil, six books. Cicero, six orations.

GROUP F. VOCATIONAL SUBJECTS.

1. Agriculture.

Agronomy.—A textbook or lecture and recitation subject upon the formation, classification, composition, physical properties and tillage of soils; the kinds, use, value, and function of different chemical fertilizers; the use, composition, and preservation of farm manures; the planting, cultivation, harvesting, use, and marketing of the different kinds of field crops. The textbook and lecture work should be supplemented by field and laboratory exercises. Four or five periods per week for one year.

Animal Husbandry and Dairying.—A textbook and recitation subject upon the types and breeds of horses, cattle, sheep, swine, and poultry with practical exercises in stock judging; a study of the principles of feeding, the classification of animal foods, with practice in computing and mixing rations. Also a subject upon the composition, properties, care and handling of milk, with practical exercises in testing milk, cream, and butter with the Babcock test. Four or five exercises per week for one year.

Horticulture.—A textbook or lecture and recitation subject upon the classes and varieties of fruits; the location and fertilization of orchards; the pruning, grafting, and spraying of fruit trees, with some study of fungous and insect pests. Practical exercises in picking, packing, and marketing of fruit. Also a study in vegetable growing in which each student learns the classes, varieties, uses, and adaptations of our most important vegetables. Practical gardening work in growing vegetables. Four or five exercises per week for one year.

Rural Economics and Farm Management.—A textbook, lecture and recitation subject upon the economic relations of land, labor, and capital. A detailed study of the cost of producing and marketing farm and garden crops. Also a

study of the business end of farming, buying and selling methods, types of farming, systems of rotation, the keeping of farm accounts, and the making of inventories. Four exercises per week for one year.

2. **Commercial Subjects.**—Bookkeeping, commercial arithmetic, commercial geography, stenography, and typewriting.

3. **Domestic Arts.**—Foods and cookery, dressmaking, household sanitation and mechanical appliances, household economics, household design and decoration.

4. **Mechanic Arts.**—Casting, drawing, forging, machine work, molding, pattern-making, woodwork.

THESES.

The preparation of a thesis upon some subject connected with the work of the division may be required of candidates for a degree by the division committee.

The subject of a thesis, together with a written approval by the head of the department concerned, must be filed with the registrar within one week of the opening of the second semester. The thesis is to be submitted to the head of the department not later than the second Tuesday preceding commencement day.

It is to be typewritten or printed upon standard thesis paper, eight and one-half by eleven inches, medium weight, and must be neatly bound in black cloth and gilt-lettered on the first cover with title, name of author, degree sought and year of graduation. This bound copy is to be filed and left with the college librarian before commencement day.

SENIOR STANDING AND DEFICIENCIES.

The regular work of the senior class, including the regular final examinations, is completed at 4 p. m. on the Tuesday of the week preceding commencement, and each member of the class may receive a statement of his standing at the office of the registrar at 2 p. m. on the following Thursday.

All deficiencies must be removed by 6 p. m. of the Saturday of the same week.

ADVANCED DEGREES.

Advanced degrees may be conferred upon candidates who have received the degree of B.S. from this college or any institution of like standing upon the fulfilment of the following requirements:

Degree of M.S.—The successful completion of a course of graduate study pursued in residence and approved by the faculty of the college.

The preparation of an original thesis satisfactory to the faculty of the college.

Degree of M.E.—Professional experience of at least four years.

The successful completion of a course of graduate study approved by the Engineering Division Committee.

The preparation of an original thesis satisfactory to the faculty of the college upon some subject approved by the Engineering Division Committee.

For details concerning the regulations governing the conferring of degrees address Dean C. H. Pettee.

REQUIREMENTS FOR DEGREES.

The degree of Bachelor of Science is conferred in the different divisions of the college upon completion of the following requirements:

Agricultural Division.

The completion of 140 semester hours:

The completion of the studies required in one of the following branches:

(a) Animal Husbandry and Dairying.
(b) Forestry.
(c) Horticulture.
(d) General Agriculture or Teaching Course.

Students graduating from the four-year courses in agriculture must present to the dean of the division on or before the second Tuesday preceding commencement satisfactory evidence of having had practical experience in farm work, either through having lived on a farm for a least two years subsequent to the age of 12 or through having worked on a farm for at least six months subsequent to the age of 16.

Students graduating from the Forestry Course must have spent at least three months in practical forest work, which time will be counted as a part of the six months requirement.

Arts and Science Division.

(a) General Arts and Science.

1. The completion of 132 hours, of which a minimum of 18 shall be required each semester of the freshman year and a minimum of 16 hours each semester thereafter.

2. The completion of English 51 and 52.

3. The completion of major and minor requirements as follows:

The Arts and Science courses are divided into three groups:

Group I.—Languages and Literature: English, French German, Latin, Spanish.

Group II.—Mathematics and Sciences: Mathematics Zoölogy, Botany, Geology, Meteorology, Chemistry, Home Economics, Agricultural subjects*, Drawing, Physics.

Group III.—History, Social Science, Education and Psychology: History, Political Science, Economics, Sociology, Education, Psychology.

Group Requirements.

Each Arts and Science student shall elect at least 18 semester hours in each of the above three groups.

Major Requirements.

Each Arts and Science student shall, at the middle of his second year, select a department to be known as his major department.

In this major department, he shall complete 18 semester hours in which he shall make a grade of 70 or better.

In case of departments in which less work is offered than the amount required for the major, the shortage may be made up from such other related departments as the head of his major department may prescribe.

Minor Requirements.

Each student shall, with the approval of the head of his major department, elect for a minor 18 semester hours of subjects related to his major.

Student Advisers.

1. For Freshmen and First Semester Sophomores:

A committee of three faculty members shall be appointed by the dean of the Arts and Science Division to act as advisers for freshmen and first semester sophomores, and the elective slip of each must be approved by a member of this committee.

*Agricultural subjects as part of minor only.

2. For Second Semester Sophomores, Juniors, and Seniors:

A student shall have for his adviser the head of his major department; provided, that in case a student majors in a department outside the Arts and Science Division, his elective slip shall also be approved by the dean of the Arts and Science Division.

(b) Home Economics.

The completion of 132 semester hours.

The completion of the courses required in the Home Economics branch.

(c) Mechanic Arts for Teachers.

The completion of 140 semester hours.

The completion of the courses required in the Mechanic Arts Course for Teachers.

Engineering Division.

The completion of 144 semester hours, not including drill in the Junior Year.

The completion of the studies required in one of the following branches:

(a) Chemical Engineering.
(b) Electrical Engineering.
(c) Mechanical Engineering.

Additional Hours.

Students desiring to take additional hours, beside the minimum numbers stated in the programs of courses (page 109 and following), should consult their advisers. The advisers have discretion with regard to two additional hours; more than two are allowed subject only to the approval of a proper division committee.

COURSES OF STUDY.

(For details, see Description of Studies which follow.)

AGRICULTURAL DIVISION.

All Courses.

FRESHMAN YEAR, FIRST SEMESTER.

		Credit Hours
Chemistry 51	Inorganic Chemistry	3
Drill 1	Military Drill	1
English 51	English Composition	3
**French 1 or*	Elementary French	3
**German 1*	Elementary German	
Mathematics 51a	Algebra and Trigonometry	4
Military Science 1	Infantry Drill Regulations	1
Zoölogy 51	General Zoölogy	3

FRESHMAN YEAR, SECOND SEMESTER.

Chemistry 52	Inorganic Chemistry	3
Drawing 54	Agricultural Drawing	2
Drill 2	Military Drill	1
English 52	English Composition	3
**French 2 or*	Elementary French	3
**German 2*	Elementary German	
Mathematics 54	Surveying	2
Military Science 2	Manual of Guard Duty	1
Zoölogy 52	Systematic Zoölogy	3

SOPHOMORE YEAR, FIRST SEMESTER.

Agronomy 51	Agricultural Engineering	3
Animal Husbandry 51	Breeds of Live Stock	4
Botany 51	General Botany	3
Chemistry 59	Introductory Qualitative Analysis	2
Drill 3	Military Drill	1
Military Science 3	Field Service Regulations	1
Physics 51	Mechanics and Heat	2
Shop Work 53	Wood Work	2
Shop Work 55	Forging	1

* Any four-year agricultural student who presents at least four years' work in two foreign languages for entrance may substitute other subjects for the French or German of the freshman year.

SOPHOMORE YEAR, SECOND SEMESTER.

		Credit Hours
**Animal Husbandry 52*	Advanced Stock Judging	2
Botany 52	General Botany	3
Chemistry 60	Quantitative Analysis	3
Dairying 52	Farm Dairying	3
Drill 4	Military Drill	1
Horticulture 52	Vegetable Gardening	2
Horticulture 54	Practical Pomology	3
Military Science 4	Field Service Regulations	1
Physics 52	Magnetism and Electricity	2

Animal Husbandry and Dairy Course.

JUNIOR YEAR, FIRST SEMESTER.

Agronomy 53	Farm Crops	3
**Animal Husbandry 55 or*	Veterinary Anatomy	3
**Dairying 53*	Buttermaking	
Entomology 1	Economic Entomology	3
Drill 5	Military Drill	1
Forestry 51	Principles of Forestry	3
Geology 51	Elementary Geology	3
Electives		2

JUNIOR YEAR, SECOND SEMESTER.

Agronomy 52	Soils	3
Animal Husbandry 54	Feeds and Feeding	3
**Animal Husbandry 56 or*	Animal Diseases	3
**Dairying 58*	Cheese Making	
Botany 56	Bacteriology	3
Dairying 54	Market Milk	3
Drill 6	Military Drill	1
Electives		2

SENIOR YEAR, FIRST SEMESTER.

Agronomy 55	Farm Management	3
Animal Husbandry 57	Animal Breeding	3
Economics 1	Elementary Economics	3
Meteorology 1	Meteorology	2
Electives		5

SENIOR YEAR, SECOND SEMESTER.

Agronomy 54	Fertilizers	3
Economics 8	Agricultural Economics	3
Electives		10

* Elective.

Forestry Course.

JUNIOR YEAR, FIRST SEMESTER.

		Credit Hours
Botany 53	Plant Physiology	3
Drill 5	Military Drill	1
Entomology 1	Economic Entomology	3
Forestry 53	Dendrology	4
Forestry 55	Silviculture	5
Geology 51	Elementary Geology	3

JUNIOR YEAR, SECOND SEMESTER.

Agronomy 52	Soils	3
Botany 54	Plant Histology	3
Drill 6	Military Drill	1
Forestry 52	Silviculture	3
Forestry 54	Forest Mensuration	3
Horticulture 56	Landscape Gardening	3
Electives		2

SENIOR YEAR, FIRST SEMESTER.

Botany 57	Plant Pathology	3
Economics 1	Elementary Economics	3
Forestry 57	Forest Protection	2
Forestry 59	Practice of Forestry	3
Meteorology 1	Meteorology	2
Electives		2

SENIOR YEAR, SECOND SEMESTER.

Economics 8	Agricultural Economics	3
Forestry 56	Forest Management	4
Electives		9

Horticultural Course.

JUNIOR YEAR, FIRST SEMESTER.

Agronomy 53	Farm Crops	3
Botany 53	Plant Physiology	3
Drill 5	Military Drill	1
Entomology 1	Economic Entomology	3
Forestry 51	Principles of Forestry	3
Geology 51	Elementary Geology	3
Horticulture 53	Greenhouse Management	3

JUNIOR YEAR, SECOND SEMESTER.

		Credit Hours
Agronomy 52	Soils	3
Drill 6	Military Drill	1
Horticulture 56	Landscape Gardening	3
Horticulture 58	Nursery Management	3
Horticulture 60	Floriculture	2
Horticulture 68	Vegetable Forcing	3
Electives		2

SENIOR YEAR, FIRST SEMESTER.

Agronomy 55	Farm Management	3
Botany 57	Plant Pathology	3
Economics 1	Elementary Economics	3
Horticulture 55	Systematic Pomology	4
Horticulture 57	Evolution of Plants	2
Meteorology 1	Meteorology	2

SENIOR YEAR, SECOND SEMESTER.

Agronomy 54	Fertilizers	3
Economics 8	Agricultural Economics	3
Horticulture 62	Horticultural Seminar	1
Electives		8

General or Teaching Course.

JUNIOR YEAR, FIRST SEMESTER.

Agronomy 53	Farm Crops	3
Drill 5	Military Drill	1
Education 1 or 3	History of Education	2
Education 5	Secondary Education	3
Entomology 1	Economic Entomology	3
Forestry 51	Principles of Forestry	3
Geology 51	Elementary Geology	3

JUNIOR YEAR, SECOND SEMESTER.

Agronomy 52	Soils	3
Animal Husbandry 54	Feeds and Feeding	3
Dairying 54	Market Milk	3
Drill 6	Military Drill	1
Psychology 52	Introduction to Psychology	3
Electives		5

SENIOR YEAR, FIRST SEMESTER.

		Credi Hour
Agronomy 55	Farm Management	
Economics 1	Elementary Economics	
Horticulture 57	Evolution of Plants	
Meteorology 1	Meteorology	
Psychology 53	Adolescent Psychology	
Electives		

SENIOR YEAR, SECOND SEMESTER.

Agronomy 54	Fertilizers	
Economics 8	Agricultural Economics	
Education 4	School Hygiene	
Electives		

ARTS AND SCIENCE DIVISION.

General Arts and Science Course.

All elective except English 51 and 52, Drill and Military Science, and for women, Home Economics 1 and Physical Culture.

FRESHMAN YEAR, FIRST SEMESTER.

Chemistry 51 or / *Chemistry 55*	Inorganic Chemistry	
Drawing 51	Engineering Drawing	
Drawing 63	Free-hand Drawing	
Drawing 67	House Planning	
Drill 1	Military Drill	
English 51	English Composition and Rhetoric	
French 1 or / *German 1*	Elementary French / Elementary German	
History 1	European History, 476–1492	
Home Economics 1	Personal Hygiene	
Home Economics 3 or / *Home Economics 5*	Food Economics / Clothing	
Latin 1	Livy	
Mathematics 51a	Algebra and Trigonometry	
Mathematics 51b	Trigonometry and Analytic Geometry	
Mathematics 53	Solid Geometry	
Military Science 1	Infantry Drill Regulations	
Physical Culture 1	Physical Culture	

		Credit Hours
Spanish 1	Elementary Spanish	3
Shop Work 51	Wood Work	2
Zoölogy 51	General Zoölogy	3

FRESHMAN YEAR, SECOND SEMESTER.

Chemistry 52 or	Inorganic Chemistry	3
Chemistry 56	Special Chemistry	
Drawing 58	Descriptive Geometry	3
Drawing 64	Free-hand Drawing	2
Drawing 68	House Structure	2
Drill 2	Military Drill	1
Economics 2	Commercial Geography	3
English 52	English Composition and Rhetoric	3
English 54	Introduction to English Literature	3
French 2 or	Elementary French	3
German 2	Elementary German	
History 2	European History, 1492–1715	3
Home Economics 2	The House	2
Home Economics 4	Plain Sewing	1
Latin 2	Horace	3
Mathematics 52	Analytic Geometry	4
Mathematics 54	Surveying	2
Military Science 2	Manual of Guard Duty	1
Physical Culture 2	Physical Culture	1
Spanish 2	Elementary Spanish	3
Zoölogy 52	General Zoölogy	3
Zoölogy 58	Human Anatomy and Physiology	3

SOPHOMORE YEAR, FIRST SEMESTER.

All elective except Drill, Military Science and Physical Culture.

Botany 51	General Botany	3
Chemistry 57	Special Organic Chemistry	3
Chemistry 59	Introductory Qualitative Analysis	2
Drawing 63a	Advanced Free-hand Drawing	2
Drawing 69	Free-hand Drawing	2
Drill 3	Military Drill	1
Economics 1	Elementary Economics	3
Education 1 or	History of Education	2
Education 3		
English 53	Advanced Composition and Literary Criticism	3

		Credit Hours
English 63	Writing for Publication	3
Entomology 1	Economic Entomology	3
French 3	French Prose	3
German 3	German Prose	3
History 3	European History, 1715–1815	3
Home Economics 7	Foods and Principles of Cooking	3
Mathematics 55	Calculus	5
Military Science 3	Field Service Regulations	1
Physical Culture 3	Physical Culture	1
Physics 51	Mechanics and Heat	2
Physics 53	Physical Theory and Practice	6
Physics 59	Elementary Optics	2
Sociology 51	Primitive Man and Social Origins	3
Spanish 1	Elementary Spanish	3
Spanish 3	Spanish Prose	3
Zoölogy 51	General Zoölogy	3
Zoölogy 53	Faunal Zoölogy (Invertebrate)	3

SOPHOMORE YEAR, SECOND SEMESTER.

Botany 52	General Botany	3
Chemistry 68	Organic Chemistry	3
Drawing 64a	Advanced Free-hand Drawing	2
Drawing 70	Color and Design	2
Drill 4	Military Drill	1
Economics 2	Commercial Geography	3
English 54	Introduction to English Literature	3
English 56	Argumentation	3
English 58	Elizabethan Drama	3
Entomology 2	Applied Economic Entomology	3
Entomology 4	Household Insects	2
French 4	French Prose	3
German 4	German Prose	3
History 4	European History since 1815	3
Home Economics 6	Textiles	2
Home Economics 8	Foods and Principles of Cooking	4
Mathematics 56	Calculus	3
Military Science 4	Field Service Regulations	1
Physical Culture 4	Physical Culture	1
Physics 52	Magnetism and Electricity	2
Physics 54	Physical Theory and Practice	6
Physics 58	Elementary Physics and Practice	3
Psychology 52	Introduction to Psychology	3

		Credit Hours
Spanish 2	Elementary Spanish	3
Spanish 4	Spanish Prose	3
Zoölogy 52	Systematic Zoölogy	3
Zoölogy 54	Faunal Zoölogy (Vertebrate)	3

JUNIOR YEAR, FIRST SEMESTER.

All elective except Drill and Physical Culture.

Botany 53	Plant Physiology	3
Botany 55	General Bacteriology	3
Botany 57	Plant Pathology	3
Chemistry 65	Quantitative Analysis	4
Dairying 51	Domestic Dairying	3
Drawing 63a	Advanced Free-hand Drawing	2
Drill 5	Military Drill	1
Economics 5	Labor Problems	3
Economics 9	Corporation Finance	3
Economics 13	Accounting	3
English 53	Advanced Composition and Literary Criticism	3
English 55 or	The English Novel	3
English 57	Modern English Poetry	
English 61	Modern English Prose	3
English 63	Writing for Publication	3
Entomology 1	Economic Entomology	3
Entomology 3	Insects of Domestic Animals	2
Entomology 5	Advanced Economic Entomology	2
Forestry 51	Principles of Forestry	3
French 5 or	French Literature and Composition	3
French 7		
Geology 51	Elementary Geology	3
German 5 or	Goethe	3
German 7 or	Schiller	
German 13	Sudermann	
German 9 or	German Composition and Conversation	3
German 11		
History 5	American History to 1801	3
Home Economics 11	Principles of Nutrition	3
Home Economics 13	House Decoration	3
Mathematics 57 or	Differential Equations	2
Mathematics 59	Theory of Equations	
Military Science 5	Field Engineering and Hasty Intrenching	1

		Credit Hours
Physical Culture 5	Physical Culture	1
Physics 55	Mathematical Physics and Practice	6
Political Science 3	American Constitutional Law	3
Psychology 53	Psychology of the Adolescent	3
Sociology 53	Mental Defectives	3
Sociology 55	Social Psychology	3
Spanish 1	Elementary Spanish	3
Zoölogy 59	Hygiene and Sanitation	3
Zoölogy 61	Embryology	3
Zoölogy 65	Comparative Anatomy	3
Zoölogy 67	Histology	3

JUNIOR YEAR, SECOND SEMESTER.

Botany 54	Plant Histology	2
Botany 56	Bacteriology	3
Chemistry 68	Organic Chemistry	3
Drill 6	Military Drill	1
Economics 4 or	Money and Banking	3
Economics 6	Public Finance and Taxation	
Economics 8	Agricultural Economics	3
Economics 14	Cost Accounting	3
Education 4	School Hygiene	2
English 54	Introduction to English Literature	3
English 56	Argumentation	3
English 58	Elizabethan Drama	3
English 60	American Literature	4
English 62	Shakespeare's Plays	3
Entomology 4	Household Insects	2
Entomology 6	Advanced Economic Entomology	3
Forestry 52	Silviculture	3
French 6 or	French Literature and Composition	3
French 8		
German 6 or	Goethe	3
German 8 or	Schiller	
German 14	Sudermann	
German 10 or	German Composition and Conversation	3
German 12		
History 6	Constitutional and Political History of U. S. (1801–1861)	3
Home Economics 10	Clothing	3
Home Economics 12	Dietetics	3

		Credit Hours
Mathematics 58 or	Advanced Calculus	2
Mathematics 60	History of Mathematics	
Military Science 6	Military Map Reading and Sketching	1
Mineralogy 54	Mineralogy	2
Physical Culture 6	Physical Culture	1
Physics 56	Mathematical Physics and Practice	6
Political Science 2	Laws of Business	3
Psychology 52	Introduction to Psychology	3
Sociology 52	Social Pathology and Modern Philanthropy	3
Spanish 2	Elementary Spanish	3
Zoölogy 54	Faunal Zoölogy	3
Zoölogy 60	Advanced Sanitation	3
Zoölogy 66	Comparative Anatomy of the Vertebrates	3

SENIOR YEAR, FIRST SEMESTER.

All elective.

Botany 53	Plant Physiology	3
Botany 55	General Bacteriology	3
Botany 57	Plant Pathology	3
Chemistry 71	Organic Chemical Laboratory	3
Dairying 51	Domestic Dairying	3
Drill 7	Military Drill	1
Economics 5	Labor Problems	3
Economics 9	Corporation Finance	3
Economics 13	Accounting	3
Education 5	Secondary Education	3
Education 7	Principles of Education	3
Education 9	Administration and Supervision	2
English 55	English Novel	3
English 57	Modern English Poetry	3
English 59	Chaucer	3
English 61	Modern English Prose	3
Entomology 1	Economic Entomology	3
Entomology 3	Insects of Domestic Animals	2
Entomology 5	Advanced Economic Entomology	3
French 5 or	French Literature and Composition	3
French 7		
Geology 51	Elementary Geology	3

		Credit Hours
German 5 or	Goethe	
German 7 or	Schiller	3
German 13	Sudermann	
German 9 or	German Composition and Conversation	3
German 11		
History 7	Constitutional and Political History of U. S. since 1860	3
Home Economics 19	Household Administration	3
Mathematics 57 or	Differential Equations	2
Mathematics 59	Theory of Equations	
Meteorology 1	Meteorology	2
Military Science 7	Army Regulations	1
Physical Culture 7	Physical Culture	1
Political Science 3	American Constitutional Law	3
Sociology 53	Mental Defectives	3
Spanish 3	Spanish Prose	2
Thesis		2
Zoölogy 55	Systematic Entomology	3
Zoölogy 69	Advanced Zoölogy	3
Zoölogy 71	Vocational Zoölogy	

SENIOR YEAR, SECOND SEMESTER.

Astronomy 2	Astronomy	2
Botany 54	Plant Histology	2
Botany 56	Bacteriology	3
Chemistry 76	Physical and Electro Chemistry	3
Drill 8	Military Drill	1
Economics 4 or	Money and Banking	3
Economics 6	Public Finance and Taxation	
Economics 8	Agricultural Economics	3
Economics 14	Cost Accounting	3
Education 6	History and Theory of Industrial Education	2
English 56	Argumentation	3
English 58	Elizabethan Drama	3
English 60	American Literature	4
English 62	Shakespeare's Plays	3
Entomology 2	Applied Economic Entomology	3
Entomology 4	Household Insects	2
French 6 or	French Literature and Composition	3
French 8		
Geology 52	Historical Geology	3

		Credit Hours
German 6 or	Goethe	
German 8 or	Schiller	3
German 14	Sudermann	
German 10 or	German Composition and Con-	
German 12	versation	3
Mathematics 58 or	Advanced Calculus	
Mathematics 60	History of Mathematical Science	2
Military Science 8	Army Regulations	1
Physical Culture 8	Physical Culture	1
Political Science 2	Laws of Business	3
Sociology 54	Rural Sociology	3
Sociology 56	Introduction to General Sociology	3
Sociology 58	Social Ethics	3
Spanish 4	Spanish Prose	3
Thesis		1 or 2
Zoölogy 56	Ornithology	3
Zoölogy 62	Advanced Neurology	3
Zoölogy 64	Evolution and Genetics	3
Zoölogy 68	Insect Anatomy	3
Zoölogy 70	Advanced Zoölogy	3
Zoölogy 72	Vocational Zoölogy	3

Home Economics Course.

FRESHMAN YEAR, FIRST SEMESTER.

Required Subjects:		
Drawing 67	Houseplanning	2
Chemistry 55	Inorganic Chemistry	3
English 51	English Composition and Rhetoric	3
Home Economics 1	Personal Hygiene	2
Home Economics 3	Elementary Cooking	2
Physical Culture 1	Physical Culture	1
Zoölogy 58	General Zoölogy	3
*Elective Subjects:	Total hours	3
French 1	Elementary French	3
German 1	Elementary German	3
History 1	European History, 476–1492	3
Mathematics 51a	Algebra and Trigonometry	4
Mathematics 51b	Trigonometry and Analytic Geometry	4

*Other subjects may be offered for the elective requirement. The student has a choice of a wide range from all departments of the college.

FRESHMAN YEAR, SECOND SEMESTER.

		Credit Hours
Required Subjects:		
Chemistry 56	Special Chemistry	3
Drawing 68	House Structure	2
English 52	English Composition and Rhetoric	3
Home Economics 2	The House	2
Home Economics 4	Plain Sewing	1
Physical Culture 2	Physical Culture	1
Zoölogy 58	Human Anatomy and Physiology	3
*Elective Subjects:	Total hours	6
English 54	Introduction to English Literature	3
French 2	Elementary French	3
German 2	Elementary German	3
History 2	European History 1492–1715	3

SOPHOMORE YEAR, FIRST SEMESTER.

Required Subjects:		
Chemistry 57	Special Organic Chemistry	3
Drawing 69	Freehand Drawing	2
Home Economics 7	Foods and Principles of Cooking	3
Physical Culture 3	Physical Culture	1
Zoölogy 59	Hygiene and Sanitation	3
*Elective Subjects:	Total hours	4
Botany 51	General Botany	3
English 53	Advanced Composition and Criticism	3
Education 1 or / *Education 3*	History of Education	2
French 3	French Prose	3
German 3	German Prose	3
History 3	European History 1715–1815	3
†*Physics 57*	Household Physics	2

SOPHOMORE YEAR, SECOND SEMESTER.

Required Subjects:		
Home Economics 6	Textiles	2
Home Economics 8	Foods and Principles of Cooking	3
Drawing 70	Color and Design	2

* Other subjects may be offered for the elective requirement. The student has a choice of a wide range from all departments of the college.

† Should be elected by students not offering physics for entrance.

		Credit Hours
Physical Culture 4	Physical Culture	1
Psychology 52	Introduction to Psychology	3
Elective Subjects:	Total hours	5
Botany 52	General Botany	3
English 56	Argumentation	3
Entomology 4	Household Insects	2
History 4	European History since 1815	3
French 4	French Prose	3
German 4	German Prose	3

JUNIOR YEAR, FIRST SEMESTER.

Required Subjects:		
Botany 55	Bacteriology	3
Home Economics 11	Nutrition	3
Home Economics 13	House Decoration	2
Physical Culture 5	Physical Culture	1
Economics 1	Elementary Economics	3
*Elective Subjects:	Total hours	4
Psychology 53	Adolescent Psychology	3
Dairying 51	Domestic Dairying	3
History 5	American History to 1801	3
English 57	Modern English Poetry	3

JUNIOR YEAR, SECOND SEMESTER.

Required Subjects:		
Home Economics 12	Dietetics	3
Physical Culture 6	Physical Culture	1
Home Economics 10	Clothing	3
*Elective Subjects:	Total hours	9
Education 4	School Hygiene	2
Home Economics 18	History of Costume	3
Home Economics 14	Household Chemistry	3
History 6	Constitutional and Political History of U. S.	3
English 60	American Literature	4

SENIOR YEAR, FIRST SEMESTER.

Required Subjects:		
Sociology 51	Primitive Man	3
Home Economics 19	Household Administration	3

* Other subjects may be offered for the elective requirement.

		Credit Hours
*Elective Subjects:	Total hours	10
Education 5	Secondary Education	3
Psychology 55	Social Psychology	3
Home Economics 21	Original Problems	3
History 7	Constitutional and Political History to U. S. to 1860	3

SENIOR YEAR, SECOND SEMESTER.

Required Subjects:		
Zoölogy 64	Evolution and Genetics	3
Sociology 52	Social Pathology and Modern Philanthropy	3
*Elective Subjects:	Total hours	10
Home Economics 22	Original Problems	3
Home Economics 24	Teachers' course	3
Education 6	History and Theory of Industrial Education	2
Sociology 54	Rural Sociology	3

Mechanic Arts Course for Teachers.

FRESHMAN YEAR, FIRST SEMESTER.

Chemistry 51	Inorganic Chemistry	3
Drawing 51	Engineering Drawing	2
Drill 1	Military Drill	1
English 51	English Composition and Rhetoric	3
Mathematics 51a or	Algebra and Trigonometry	4
Mathematics 51b	Trigonometry and Analytic Geometry	4
Mathematics 53	Solid Geometry	2
Military Science 1	Infantry Drill Regulations	1
Shop Work 51	Wood Work	2

FRESHMAN YEAR, SECOND SEMESTER.

Chemistry 52	Inorganic Chemistry	3
Drawing 58	Descriptive Geometry	3
Drill 2	Military Drill	1
English 52	English Composition and Rhetoric	3
**History 2*	European History, 1492–1715	3

* Elective.

		Credit Hours
**Mathematics 52*	Analytic Geometry	4
Mathematics 54	Surveying	2
Military Science 2	Manual of Guard Duty	1
Shop Work 52	Wood Work	2

SOPHOMORE YEAR, FIRST SEMESTER.

Chemistry 59	Introductory Qualitative Analysis	2
Drill 3	Military Drill	1
Economics 1	Elementary Economics	3
English 53	Advanced Composition and Literary Criticism	3
**German 1*	Elementary German	3
Military Science 3	Field Service Regulations	1
Physics 51	Mechanics and Heat	2
Shop Work 59	Wood Work	3
**Zoölogy 51*	General Zoölogy	3

SOPHOMORE YEAR, SECOND SEMESTER.

Drawing 62	Machine Drawing	3
Drill 4	Military Drill	1
**English 56*	Argumentation	3
**German 2*	Elementary German	3
Military Science 4	Field Service Regulations	1
Physics 52	Magnetism and Electricity	2
Physics 58	Elementary Physics and Practice	3
Psychology 52	Introduction to Psychology	3
Shop Work 60	Wood Work	2
**Zoölogy 52*	General Zoölogy	3

JUNIOR YEAR, FIRST SEMESTER.

Drawing 65	Architectural Drawing	2
Drill 5	Military Drill	1
Education 5	Secondary Education	3
**English 55 or*	The English Novel	3
**English 57*	Modern English Poetry	
Forestry 53	Dendrology	4
**Geology 51*	Elementary Geology	3
**German 3*	German Prose	3
**History 1*	European History, 476–1492	3

* Elective.

		Credit Hours
**Military Science 5*	Field Engineering and Hasty Intrenching	1
**Sociology 51*	Primitive Man and Social Origins	3
Shop Work 65	Wood Work	2

JUNIOR YEAR, SECOND SEMESTER.

Drawing 66	Architectural Drawing	2
Drill 6	Military Drill	1
**Economics 2*	Commercial Geography	3
**Economics 4 or*	Money and Banking	3
**Economics 6*	Public Finance and Taxation	
Education 4	School Hygiene	2
**English 60*	American Literature	4
**Forestry 60*	Forest Utilization	3
**German 4*	German Prose	3
**History 2*	European History, 1492–1715	3
**Military Science 6*	Military Map Reading and Sketching	1
**Political Science 2*	Laws of Business	3
Shop Work 66	Forge Work	3

SENIOR YEAR, FIRST SEMESTER.

Electrical Engineering 9	Industrial Electricity	3
**English 55 or*	The English Novel	3
**English 57*	Modern English Poetry	
**English 61*	English Prose	3
**History 5*	American History to 1801	3
**Political Science 3*	American Constitutional Law	3
Psychology 53	Adolescent Psychology	3
Shop Work 71	Machine Work	3

SENIOR YEAR, SECOND SEMESTER.

Drawing 72	Practical Mathematics	1
Education 6	History and Theory of Industrial Education	2
**English 60*	American Literature	4
**Forestry 60*	Forest Utilization	3
**History 6*	American History, 1801–1861	3
Mechanical Engineering 72	Manual Training and Exercises in Practical Teaching	3
**Political Science 2*	Laws of Business	3

* Elective.

		Credit Hours
Shop Work 72	Machine Work	3
**Sociology 52*	Social Pathology and Modern Philanthropy	3
**Sociology 54*	Rural Sociology	3

ENGINEERING DIVISION.

Electrical and Mechanical Engineering Courses.

FRESHMAN YEAR, FIRST SEMESTER.

E. E. 7 and M. E. 27 are elective without credit.

Chemistry 51	Inorganic Chemistry Lectures and Recitations	3
Drawing 51	Engineering Drawing Laboratory	2
Drill 1	Military Drill	1
**Electrical Engineering 7*	History of Electrical Engineering	0
English 51	Composition and Rhetoric	3
Mathematics 51b	Trigonometry and Analytical Geometry	4
Mathematics 53	Solid Geometry	2
**Mechanical Engineering 51*	History of Mechanical Engineering	0
Military Science 1	Infantry Drill Regulations	1
Shop Work 51	Wood Work	2

FRESHMAN YEAR, SECOND SEMESTER.

Chemistry 52	Inorganic Chemistry Lectures and Recitations	3
Chemistry 54	Qualitative Analysis Laboratory	3
Drawing 56	Descriptive Geometry Recitation	1
	Laboratory	2
Drill 2	Military Drill	1
English 52	English Composition and Rhetoric	3
Mathematics 52	Analytical Geometry	4
Military Science 2	Manual of Guard Duty	1

* Elective.

SOPHOMORE YEAR, FIRST SEMESTER.

		Credit Hours
Drawing 57	Machine Drawing Laboratory	3
Drill 3	Military Drill	1
Mathematics 55	Calculus	5
Military Science 3	Field Service Regulations	1
Physics 53	Physical Theory and Practice Recitations	4
	Laboratory	2
Shop 57	Forging	2

SOPHOMORE YEAR, SECOND SEMESTER.

Drill 4	Military Drill	1
Mechanical Engineering 74	Kinematics of Machinery Laboratory	2
Mathematics 56	Calculus	3
Mechanical Engineering 52	Mechanics of Engineering Recitations	3
Military Science 4	Field Service Regulations	1
Physics 54	Physical Theory and Practice Recitations	4
	Laboratory	2
Shop Work 62	Machine Work	2

JUNIOR YEAR, FIRST SEMESTER.

Drill 5	Military Drill	1
Electrical Engineering 1	Dynamo Electric Machinery Lectures and Recitations	3
	Laboratory	1
Mechanical Engineering 69	Mechanics of Engineering Recitations	5
Shop 63	Machine Work	2
Mechanical Engineering 59	Mechanical Laboratory Recitation	1
	Laboratory	1
Mechanical Engineering 77	Valve Gear and Boiler Design Laboratory	2
Mechanical Engineering 63	Materials of Construction Recitation	3

* Elective.

JUNIOR YEAR, SECOND SEMESTER.

		Credit Hours
Drill 6	Military Drill	1
Electrical Engineering 2	Dynamo Electric Machinery	
	Lectures and Recitations	3
	Laboratory	1
Mechanical Engineering 64	Machine Design	
	Lectures and Recitations	2
	Laboratory	2
Mechanical Engineering 60	Mechanical Laboratory	
	Recitation	1
	Laboratory	1
Shop 64	Manufacturing	2
Mechanical Engineering 62	Hydraulics	
	Recitations	3
Mechanical Engineering 58	Thermodynamics	
	Recitations	3

Electrical Engineering Course.

SENIOR YEAR, FIRST SEMESTER.

Economics 1	Elementary Economics	3
**Economics 13*	Accounting	3
**Electrical Engineering 3*	Telegraph and Telephone	1
Electrical Engineering 11	Electrical Engineering Practice	
	Lectures and Recitations	4
Electrical Engineering 15	Electrical Laboratory	
	Writing Reports	1
	Laboratory	2
**Electrical Engineering 27*	Contracts and Specifications	1
Mechanical Engineering 73	Power Plant Engineering	
	Lectures and Recitations	4
Mechanical Engineering 65	Mechanical Laboratory	
	Recitation	1
	Laboratory	1
**Mathematics 57 or*	Differential Equations	2
**Mathematics 59*	Theory of Equations	

SENIOR YEAR, SECOND SEMESTER.

**Economics 4 or*	Money and Banking	3
**Economics 6 or*	Public Finance and Taxation	
**Economics 14*	Cost Accounting	

* Elective.

		Credit Hours
Electrical Engineering 12	Electrical Engineering Practice	
	Lectures and Recitations	4
Electrical Engineering 14	Electric Railways	
	Lectures and Recitations	2
Electrical Engineering 16	Electrical Laboratory	
	Writing Reports	1
	Laboratory	2
Electrical Engineering 24	Design of Electrical Machinery	
	Laboratory	2
Electrical Engineering 26	Illuminating Engineering	
	Lectures and Recitations	2
Mathematics 64	Surveying	
	Recitation	1
	Laboratory	1
**English 56*	Argumentation and Debating	3
**Mathematics 58 or*	Advanced Calculus	
**Mathematics 60*	History of Mathematical Science	2
**Psychology 52*	Introduction to Psychology	3
**Sociology 52*	Social Pathology	3

Mechanical Engineering Course.

SENIOR YEAR, FIRST SEMESTER.

Economics 1	Elementary Economics	3
**Economics 13*	Accounting	3
**Electrical Engineering 3*	Telephone and Telegraph	1
**Electrical Engineering 27*	Contracts and Specifications	1
**Mathematics 57 or*	Differential Equations	2
**Mathematics 59*	Theory of Equations	
Mechanical Engineering 73	Power Plant Engineering	
	Lectures and Recitations	4
Mechanical Engineering 65	Mechanical Laboratory	
	Recitation	1
	Laboratory	1
Mechanical Enginering 79	Heating and Ventilating	
	Lectures and Recitations	2
	Laboratory	2
Shop 69	Wood Work	2

SENIOR YEAR, SECOND SEMESTER.

**Economics 4 or*	Money and Banking	3
**Economics 6 or*	Public Finance and Taxation	
**Economics 14*	Cost Accounting	

* Elective.

		Credit Hours
Electrical Engineering 12	Electrical Engineering Practice Lectures and Recitations	4
**English 56*	Argumentation and Debating	3
**Mathematics 58*	Advanced Calculus	2
**Mathematics 60*	History of Mathematical Science	
Mechanical Engineering 66	Mechanical Laboratory	
	Recitation	1
	Laboratory	2
Mechanical Engineering 68	Design Laboratory	3
**Psychology 52*	Introduction to Psychology	3
**Sociology 52*	Social Pathology	3
Mechanical Engineering 78	Industrial Engineering Lectures and Recitations	3
Mathematics 64	Surveying	
	Recitation	1
	Laboratory	1

Chemical Engineering Course.

FRESHMAN YEAR, FIRST SEMESTER.

Chemistry 51	Inorganic Chemistry	3
Drawing 51	Engineering Drawing	2
Drill 1	Military Drill	1
English 51	English Composition and Rhetoric	3
French 1 or	Elementary French	3
German 1	Elementary German	
Mathematics 51b	Trigonometry and Analytic Geometry	4
Military Science 1	Infantry Drill Regulations	1
Shop Work 51a	Wood Work	1

FRESHMAN YEAR, SECOND SEMESTER.

Chemistry 52	Inorganic Chemistry	3
Chemistry 54	Qualitative Analysis	3
Drill 2	Military Drill	1
English 52	English Composition and Rhetoric	3
French 2 or	Elementary French	3
German 2	Elementary German	
Mathematics 52	Analytical Geometry	4
Military Science 2	Manual of Guard Duty	1

* Elective.

SOPHOMORE YEAR, FIRST SEMESTER.

		Credit Hours
Chemistry 61	Qualitative Analysis	1¼
Chemistry 63	Inorganic Preparations	¾
Chemistry 65	Quantitative Analysis	4
Chemistry 67a	Organic Chemistry	2
Drill 3	Military Drill	1
German 3	German Prose	3
Mathematics 55	Calculus	5
Military Science 3	Field Service Regulations	1

SOPHOMORE YEAR, SECOND SEMESTER.

Chemistry 66	Quantitative Analysis	5
Chemistry 68a	Organic Chemistry	3
Drill 4	Military Drill	1
Geology 54	Mineralogy	2
German 16	German Prose	3
Mathematics 56	Calculus	3
Military Science 4	Field Service Regulations	1

JUNIOR YEAR, FIRST SEMESTER.

Chemistry 71	Organic Chemical Laboratory	3
Chemistry 73	Advanced Quantitative Analysis	4
Chemistry 75 or	Physical Chemistry	3
Chemistry 77	Advanced Inorganic Chemistry	
Drill 5	Military Drill	1
**Military Science 5*	Field Engineering and Hasty Intrenching	1
Physics 55	Mathematical Physics and Practice	6
Electives		3

JUNIOR YEAR, SECOND SEMESTER.

Chemistry 74	Advanced Quantitative Analysis	5
Chemistry 76 or	Physical and Electro Chemistry	3
Chemistry 78	Industrial Chemistry	
Chemistry 80	Metallurgy	
Drill 6	Military Drill	1
**Military Science 6*	Military Map Reading and Sketching	1
Physics 56	Mathematical Physics and Practice	6
Shop Work 68	Machine Work	2
Electives		3

* Elective.

SENIOR YEAR, FIRST SEMESTER.

		Credit Hours
Chemistry 75 or	Physical Chemistry	3
Chemistry 77	Advanced Inorganic Chemistry	
Chemistry 79	Assaying	1
Chemistry 83	Advanced Quantitative Laboratory	5
**Drill 7*	Military Drill	1
Economics 1	Elementary Economics	3
Electrical Engineering 21	Industrial Electricity	3
Mechanical Engineering 63	Materials of Construction	3
**Military Science 7*	Army Regulations	1

SENIOR YEAR, SECOND SEMESTER.

Chemistry 76 or	Physical and Electro Chemistry	3
Chemistry 78	Industrial Chemistry	
Chemistry 80	Metallurgy	
Chemistry 84	Thesis	7
**Drill 8*	Military Drill	1
Electrical Engineering 22	Industrial Electricity	3
English 56 or	Argumentation and Debating	3
Sociology 52	Social Pathology	
Mechanical Engineering 58	Thermodynamics	2
**Military Science 8*	Army Regulations	1

* Elective.

DESCRIPTION OF STUDIES.

Each department is given in capital letters arranged alphabetically and followed by the professors and instructors connected with the department. The number of each individual subject is followed by the name of the instructor who gives it, and the room and building in which it will meet. Abbreviations for the buildings are as follows: C. H. —Conant Hall; D.H.—DeMeritt Hall; Lib.—Library; M.H.—Morrill Hall; N.H.—Nesmith Hall; T.H.—Thompson Hall.

Following the description of each subject will be found the prerequisites, if any, and the nature and number of the meetings of the class per week. Except in drill and physical culture, the number of hours of credit each subject will count toward graduation will be equal to the number of meetings of the class per week. Two exercises in drill or physical culture per week count for one hour of credit. The following abbreviations tell the nature of the exercise: Lec.—lecture; Rec.—recitation; each of which are one hour in length; and Lab.—laboratory, two and one-half hours long.

An elective subject will be given only when there is a sufficient number of students taking the same.

AGRONOMY.

PROF. TAYLOR, ASST. PROF. PRINCE, MR. YOUNG.

51. Agricultural Engineering. Prof. Taylor. 110 M.H.

Lectures and recitations upon the mapping of farms; fencing; drainage; farm sanitation; tillage and harvesting machinery; concrete construction; silos; farm motors; roads and principles of draft. Practical work in map making, laying out drains, rope splicing, comparing farm machines, etc. For Agricultural Sophomores.

2 Lec., 1 Lab. per week. 1st S.

52. Soils. Asst. Prof. Prince. 110 M. H.

Text-book and recitations upon the formation, kinds and physical properties of soils; the movements and conservation of soil moisture; the relation of heat and air to soil; the nature and physical effects of tillage and fertilizers; laboratory work and experimentation with soils to show the physical effects of different conditions and texture. For Agricultural Juniors. *2 Lec., 1 Lab. per week. 2d S.*

53. Field Crops. Asst. Prof. Prince. 110 M.H.

Text-book and recitations upon the history, use, value and methods of culture of our various field crops, including hay and grass, with particular reference to New England conditions. Laboratory practice in judging the different varieties of grains and grasses. For Agricultural Juniors except in Forestry Course.

2 Lec., 1 Lab. per week. 1st S.

54. Fertilizers. Prof. Taylor. 110 M.H.

Lectures, text-book and recitations upon the principles of fertility and plant nutrition. A study of the value and use of plant food materials, including farm manures. For Agricultural Seniors except in Forestry Course.

Prerequisites—Chemistry 51 and 52. 3 Rec. per week. 2d S.

55. Farm Management. Mr. Young. 110 M.H.

Text-book, lectures and recitations upon the development of farming as a business, types of farming, size of farms, cropping systems, live stock problems, marketing farm products, and choosing and buying a farm. Practical work will be given in laying out farms; studying survey records of individual farms to find the labor income; also analyzing the farm business record to determine the effect of efficiency factors on the profits made. Exercises will be given in farm building arrangements, distribution of labor throughout the year, and taking survey record of the home farm. For Agricultural Seniors, except in Forestry Course.

Prerequisite—Agronomy 51. 2 Lec., 1 Lab. per week. 1st S.

56. Special Agronomy. Prof. Taylor. 110 M.H.

Advanced work for students interested in some particular line. No class exercises. The hours and kind of work must be arranged with the department before the subject is elected. For Agricultural Seniors.

Prerequisite—All preceding subjects in Agronomy except 54.

Three credit hours. 2d S.

57. Agricultural Seminar. Prof. Taylor. 110 M.H.

Library and reference work, the preparation of bibliographies, a study of the work and history of agricultural colleges and experiment stations. Lectures upon the history of agriculture. Elective for Agricultural Seniors. *2 Lec. per week. 1st S.*

58. Farm Cost Accounting. Mr. Young. 110 M.H.

Lectures on the principles of cost accounting as applied to farming, including business forms, and certain legal aspects of farming as a business. Laboratory exercises include the study of inventories, accounts with single enterprises and sets of complete cost accounts taken from actual farms.

For Agricultural Juniors. *1 Lec., 1 Lab. per week. 2d S.*

ANIMAL HUSBANDRY.

PROF. ECKMAN, ASST. PROF. MITCHELL, MR. FAWCETT.

51. Types and Breeds of Live Stock. Mr. Fawcett. 105 M.H.

A study of the different breeds of horses, cattle, sheep, and swine in respect to their origin, history, development, characteristics, and adaptability to different conditions of climate and soil. One afternoon each week is devoted to judging the different breeds. For Agricultural Sophomores.

3 Rec., 1 Lab. per week 1st S.

52. Advanced Stock Judging. Mr. Fawcett. 105 M.H.

The work consists of a study of the principles and practice of judging live stock and market classes and grades. Students intending to compete for the live stock judging team should elect this subject. For laboratory work trips are taken to some of the best herds in New England. Elective for Agricultural Sophomores.

Prerequisite—Animal Husbandry 51. *2 Rec. per week. 2d S.*

54. Feeds and Feeding. Mr. Fawcett. 105 M.H.

A study of the laws of nutrition, the character and composition of feed stuffs and methods of feeding different kinds of farm animals. For the purpose of familiarizing the students with the various feed stuffs, numerous samples of grains and by-products are used. Practice is given in calculating rations for various purposes. For Agricultural Juniors in Animal Husbandry and Dairying, and General Agricultural Courses. Elective for others.

Prerequisites—Chemistry 51 and 52. *2 Rec., 1 Lab. per week. 2d S.*

55. Veterinary Anatomy. Prof. Eckman. 105 M.H.

Lectures and recitations upon the form and structure of the domesticated animals. Special attention is paid to the study of the horse and cow. Skeletons, various anatomical specimens, models, charts and lantern slides are used to make the subject as practical as possible. The purposes of this subject are to show the relation between the skeleton and the form of the animal, to acquaint the student with the various

important organs of the body and to serve as a foundation for the study of animal diseases. For Animal Husbandry Juniors. Elective for others.

3 Rec. per week. 1st S.

56. Animal Diseases. Prof. Eckman. 105 M.H.

A study of the more common diseases of farm animals and methods of prevention and treatment, simple surgical operations, horse-shoeing and soundness. For Animal Husbandry Juniors. Elective for others.

Prerequisite—Animal Husbandry 55. 3 Rec. per week. 2d S.

57. Animal Breeding. Prof. Eckman. 105 M.H.

A study of the principles and practices of breeding farm animals. Practice is given in studying and tracing out pedigrees. For Seniors in Animal Husbandry and Dairy Course.

Prerequisite—Animal Husbandry 51. 2 Rec., 1 Lab. per week. 1st S.

58. Live Stock Management. Prof. Eckman. 105 M.H.

Lectures and recitations upon the care and management of breeding and show animals. Elective for Agricultural Seniors.

Prerequisites—Animal Husbandry 51, 54, 56, and 57.

3 Rec. per week. 2d S.

61. Poultry. Asst. Prof. Mitchell. 209 M.H.

In this subject are discussed the location of a poultry farm, poultry buildings, poultry house construction, types and breeds of poultry, caponizing, killing and dressing, and fattening. Elective for Agricultural Seniors. *2 Lec., 1 Lab. per week. 1st S.*

62. Poultry. Asst. Prof. Mitchell. 209 M.H.

This covers the subjects of poultry foods and feeding, incubation, brooding, markets, poultry diseases, and poultry farm problems. One laboratory period and two lectures per week. Elective for Agricultural Seniors. *2 Lec., 1 Lab. per week. 2d S.*

63. Animal Diseases. Prof. Eckman. 105 M.H.

A continuation of Animal Husbandry 56. Practice is given in diagnosing diseases and treating such cases as can be found in the vicinity of Durham. Elective for Agricultural Seniors.

Prerequisite—Animal Husbandry 56. 3 Rec. per week. 1st S.

64. Poultry. Asst. Prof. Mitchell. 209 M.H.

Special work in poultry. The work of this subject is to be arranged with the instructor. For Agricultural Seniors.

1 to 3 hours' credit. 2d S.

65. Live Stock Markets and Products. Mr. Fawcett. 105 M.H.

A study of the various kinds of live stock markets and of the methods and regulations applying to the transportation of live stock. Some time will be spent in a study of the large live stock centers, the stock yards, and the government inspection of animals before and after slaughter. The various cuts of meats, and butchering of animals on the farm will be discussed. References will be supplied the student for individual work. Occasional trips will be taken to slaughter houses and packing-plants. Elective for Animal Husbandry Seniors.

Prerequisite—Animal Husbandry 52. *3 Rec. per week. 1st S.*

ASTRONOMY.

PROF. PETTEE

2. Astronomy. Prof. Pettee. 102 T.H.

A short culture subject designed to give the student a simple explanation of the many phenomena constantly exhibiting themselves in the universe and to acquaint him with the present state of astronomic science. Elective for Arts and Science Juniors and Seniors.

2 Rec. per week. 2d S.

BOTANY.

PROF. BUTLER, ASST. PROF. BLACK, DR. OTIS.

51. General Botany. Asst. Prof. Black. 206 N.H.

Morphology and histology of plants. For Agricultural Sophomores. Elective for other students. Given in two sections.

1 Lec., 2 Lab. per week. 1st S.

52. General Botany. Asst. Prof. Black. 206 N.H.

Organography and classification of plants. For Agricultural Sophomores. Elective for other students including Freshmen. Given in two sections.

Prerequisite—Botany 51. *1 Lec., 2 Lab. per week. 2d S.*

53. Plant Physiology. Prof. Butler, Dr. Otis. 202 N.H.

Structure and properties of the cell, absorption and movement of water; metabolism; growth and irritability. For Forestry, and Horticultural Juniors. Elective for other students.

Prerequisite—Botany 52. *1 Lec., 2 Lab. per week. 1st S.*

54. Plant Histology. Asst. Prof. Black. 206 N.H.

Technique, characterization and differentiation of plant tissues. Comparative histology. For Forestry Juniors. Elective for other students.

Prerequisite—Botany 52. *3 Lab. per week. 2d S.*

55. General Bacteriology. Asst. Prof. Black. 206 N.H.

Lectures on the morphology and physiology of the bacteria, the principal bacterial diseases, the rôle of bacteria in the arts and industries. For Home Economics Juniors. Elective for other Juniors and Seniors.

3 Lec. per week. 1st S.

56. Bacteriology. Asst. Prof. Black. 202 N.H.

Technique. Morphology and biology of the principal non-pathogenic and pathogenic bacteria.

Prerequisite—Botany 55 except for Animal Husbandry and Dairy students. *3 Lab. per week. 2d S.*

57. Plant Pathology. Prof. Butler, Asst. Prof. Black. 206 N.H.

Fungous Diseases of plants, their symptoms, cause and prevention. For Forestry and Horticultural Seniors. Elective for other students.

Prerequisite—Botany 53. *1 Lec., 2 Lab. per week. 1st S.*

58. Mycology. Prof. Butler. 202 N.H.

Morphology and biology of the fungi. For advanced students.

Prerequisite—Botany 57. *2 Lab. per week. 2d S.*

59. Embryology. Prof. Butler. 202 N.H.

Technique. Origin and development of the embryo. For advanced students.

Prerequisite—Botany 53. *2 Lab. per week. 1st S.*

60. Advanced Botany. Prof. Butler.

For advanced students. Prerequisites will depend on the nature of the subject selected for study.

Credit and hours by arrangement. 2d S.

61. Advanced Botany. Prof. Butler.

For advanced students. Prerequisites will depend on the nature of the subject selected for study.

Credit and hours by arrangement. 1st S.

CHEMISTRY.

PROF. JAMES, ASSOC. PROF. PERLEY, MR. STEWART, MR. GRANT.

51. Inorganic Chemistry. { I. Prof. James. 109 C.H. / II. Assoc. Prof. Perley. 204 C.H. }

Lectures and recitations on general and theoretical chemistry, illustrated by experiments, charts, specimens, lantern views, etc. Solution of chemical problems will be required. For Agricultural and Engineering Freshmen. Elective for other Freshmen.

3 Rec. per week. 1st S.

52. Inorganic Chemistry. { I. Prof. James. 109 C.H. / II. Assoc. Prof. Perley. 204 C.H.

A continuation of Chemistry 51, but the time will be mainly spent on the metallic elements, their metallurgy, salts, etc.

Prerequisite—Chemistry 51. *3 Rec. per week. 2d S.*

54. Qualitative Analysis. Assoc. Prof. Perley, Mr. Grant. 201 C.H.

Laboratory practice, with occasional lectures and recitations. The student is expected to become proficient in the separation and detection of the common acids and bases and to keep a full set of notes. For Engineering Freshmen.

Prerequisite—Chemistry 51. *3 Lab. Periods per week. 2d S.*

55. Inorganic Chemistry. Mr. Grant. 204 C.H.

Similar to Chemistry 51. For Home Economics Freshmen.

3 Rec. per week. 1st S.

56. Special Chemistry. Mr. Grant. 204 C.H.

A continuation of Chemistry 55 and differing slightly from Chemistry 52.

Prerequisite—Chemistry 55. *3 Rec. per week. 2d S.*

57. Special Organic Chemistry. Mr. Grant. 109 C.H.

A study of the more important organic compounds from the viewpoint of the Home Economics student. For Home Economics Sophomores.

Prerequisites—Chemistry 55 and 56. *3 Rec. per week. 1st S.*

59. Introductory Qualitative Analysis.
Assoc. Prof. Perley, Mr. Grant. 201 C. H.

Introduction in qualitative analysis specially arranged for Agricultural students. For Agricultural and Mechanic Arts Sophomores. Elective for Arts and Science students.

Prerequisite—Chemistry 51. *2 Lab. per week. 1st S.*

60. Quantitative Analysis. Mr. Stewart. 201 C.H.

Introduction to quantitative analysis, consisting of the analyses of simple compounds and materials such as feeds, fertilizers, soils, water, etc. For Agricultural Sophomores.

Prerequisites—Chemistry 51 and 52. *3 Lab. Periods per week. 2d S.*

61. Qualitative Analysis. Assoc. Prof. Perley, Mr. Grant. 201 C.H.

Advanced work for Chemical Sophomores on insoluble substances and the rarer elements, to precede Chemistry 65.

20 Lab. exercises. 1st S.

63. Inorganic Preparations. Prof. Perley, Mr. Grant. 201 C.H.

Study of the preparation and purification of inorganic compounds, including their extraction from minerals. For Chemical Sophomores.

Prerequisites—Chemistry 51 and 52. *12 Lab. exercises. 1st S.*

65. Quantitative Analysis. Mr. Stewart. 103, 205 C.H.

A preliminary study of quantitative analysis to familiarize the student with the general methods of chemical manipulation and analysis. For Chemical Sophomores. Elective for Arts and Science Sophomores, Juniors and Seniors, provided laboratory facilities permit.

Prerequisites—Mathematics 52, German 1 and 2, Chemistry 54.
4 Lab. per week. 1st S.

66. Quantitative Analysis. Mr. Stewart. 103, 205 C.H.

A continuation of Chemistry 65. For Chemical Sophomores.
5 Lab. per week. 2d S.

67. Organic Chemistry. Prof. James. 109 C.H.

Lectures and recitations. A study of the chemistry of the carbon compounds. For Chemical Sophomores. Elective for Arts and Science students.

Prerequisites—Chemistry 51 and 52. *2 Rec. per week. 1st S.*

68. Organic Chemistry. Prof. James. 109 C.H.

A continuation of Chemistry 67. For Chemical Sophomores. Elective for Arts and Science students.

Prerequisite—Chemistry 67. *3 Rec. per week. 2d S.*

71. Organic Chemical Laboratory. Prof. James. 205 C.H.

Consists mainly of laboratory practice in preparing and purifying organic compounds. Lectures and recitations will be held from time to time in connection with the practice. For Chemical Juniors. Elective for Arts and Science students.

Prerequisite—Chemistry 68. *3 Lab. per week. 1st S.*

73. Advanced Quantitative Analysis. Mr. Stewart. 205–103 C.H.

This subject will be made to fit the end which each student has in view and will be largely an individual one. For those students desiring to specialize in agricultural and food chemistry the analysis made will tend in the main toward agricultural products, fertilizers, mucks, marls, manures, dairy products, waters, foodstuffs, sugars, etc. For the student wishing to enter metallurgical works, the analyses will be in the main upon iron and steel and other metals, ores, limestones, slags, alloys, fuels, etc. As a preparation for the study of medicine, work will

be done on poisons, drugs, foods, urine, etc. Other lines will be arranged to meet the wants of the individual student. Each student will be given some practice in all of the branches of agricultural, metallurgical, medical, sanitary and industrial chemistry, in order to lay a foundation for any future work which may be required of him. A short study in gas and oil analysis will also be provided. For Chemical Juniors.

Prerequisite—Chemistry 65. *6 Lab. per week. 1st S.*

74. Advanced Quantitative Analysis. Mr. Stewart. 205–103 C.H.

A continuation of Chemistry 73. For Chemical Juniors.

7 Lab. per week. 2d S.

75. Physical Chemistry. Assoc. Prof. Perley. 204 C.H.

Advanced study of chemical theory. Practical experiments will be performed with the aid of the student, in the determination of vapor density, molecular weights, specific heat, etc.; and the study of isomorphism, diffusion of gases, solutions, ionization, electrolysis, molecular and atomic volume, thermo chemistry, equilibrium, the phase rule, etc., will take up much of the time. For Chemical Juniors or Seniors. Elective for Arts and Science students.

Prerequisites—Chemistry 51 and 52. *3 Rec. per week. 1st S.*

***76. Physical and Electro Chemistry, Lectures.**

Assoc. Prof. Perley. 204 C.H.

A continuation of Chemistry 75. For Chemical Juniors or Seniors. Elective for Arts and Science students. *3 Rec. per week. 2d S.*

77. Advanced Inorganic Chemistry. Prof. James. 109 C.H.

Advanced study of the elements and their compounds. For Chemical Juniors and Seniors. Elective for Arts and Science students.

Prerequisites—Chemistry 51 and 52. *3 Rec. per week. 1st S.*

***78. Industrial Chemistry.** Assoc. Prof. Perley. 204 C.H.

Lectures on chemical manufactures, such as sugar, sodium carbonate, fertilizers, sulphuric acid, glass, matches, paints, dyes, soaps, illuminating gas, petroleum, the processes employed in the smelting of ores, of iron, lead, copper, zinc, silver, gold, etc., and the methods used in refining these metals. The lectures are illustrated by stereopticon and by specimens of products. Trips to the leading New England cities to examine important chemical manufactures will be taken as far as practicable. For Chemical Juniors or Seniors. Elective for Arts and Science students.

Prerequisites—Chemistry 51 and 52. *3 Lec. per week. 2d S.*

* Chemistry 78 is given in alternate years with Chemistry 76.

79. Assaying. Assoc. Prof. Perley. 7 C.H.

A study in the fire assay of gold and silver ores. For Chemical Seniors.

Prerequisite—Chemistry 65. *Seventeen exercises. 1st S.*

83. Advanced Quantitative Laboratory. Prof. James. Research Rooms.

Especially arranged for students of the Chemical Engineering Course. May merge at any time into 84 and will usually do so about the middle of the first semester. For Chemical Seniors.

6 Lab. per week. 1st S.

84. Thesis. (Chemical Research.) Prof. James. Research Rooms.

The work of the last semester of the Chemical Engineering Course is given up to the special study of some selected subject in any branch of chemical science and the student is required to present a thesis showing him to be capable of independence of thought and manipulation. For Chemical Seniors. *7 Lab. per week. 2d S.*

DAIRYING.

PROF. RASMUSSEN, MR. WILSON.

51. Domestic Dairying. Mr. Wilson. Room Dairy Bldg.

Nutritive and economic value of milk; milk hygiene, and the relation of milk to public health; market milk, modified milk, condensed milk, milk powders, fermented milks; butter, cheese and ice cream. Laboratory exercises are given in manufacture and in testing purity of dairy products. Elective for Home Economics and Arts and Science Juniors and Seniors.

2 Lec., 1 Lab. per week. 1st S.

52. Farm Dairying. Mr. Wilson. Dairy Bldg.

Dairying in its relation to other branches of agriculture and other industries; study of the composition of milk; the use of the Babcock test, and tests for determining acidity of milk; the use of the lactometer in detecting adulteration of milk; value and methods of keeping records of dairying cows; coöperation in dairying.

2 Lec., 1 Lab. per week. 2d S.

53. Butter Making. Prof. Rasmussen. Dairy Bldg.

A study of the secretion, and of the chemical and physical properties of milk; different systems of creaming, and factors influencing efficiency of hand separators; pasteurization, cream ripening, commercial starters, churning and machinery. Required for Animal Husbandry and Dairy Juniors. Elective for other Agricultural students.

Prerequisite—Dairying 52. *2 Lec., 1 Lab., per week. 1st S.*

54. Market Milk. Prof. Rasmussen. Dairy Bldg.

A study of the value of milk as a food; the production and handling of market milk, of certified and modified milk, and commercial milk inspection. Exercises will be given in the judging of milk and cream and scoring of dairy barns. For Animal Husbandry and Dairy and General or Teaching Juniors. Elective for all other students.

Prerequisite —Dairying 52. *2 Lec., 1 Lab. per week. 2d S.*

55. Factory Management. Prof. Rasmussen. Dairy Bldg.

Lectures and recitations on the organization, location, construction and operation of factories; special problems connected with the manufacture of butter; dairy conditions in foreign countries; scoring of butter. Elective.

Prerequisites—Dairying 52 and 53. *2 Lec., 1 Lab. per week. 1st S.*

57. Dairy Bacteriology. Mr. Wilson. Dairy Bldg.

Methods of bacteriological analysis of milk and its products; isolation and study of the different types of dairy bacteria; relation of bacteria to milk and its products; study of effect of separation, clarification, pasteurization, aëration, and straining on bacteria in milk; and the application of bacteriological principles to the dairy industry. Elective for Animal Husbandry and Dairy Seniors.

Prerequisite—Botany 56. *1 Lec., 2 Lab. per week. 1st S.*

58. Cheese Making. Mr. Wilson. Dairy Bldg.

Lectures and laboratory work covering the details of manufacture, curing and marketing of the more important kinds of cheese.

Prerequisite—Dairying 52. *2 Lec., 1 Lab. per week. 2d S.*

60. Ice Cream Making. Mr. Wilson. Dairy Bldg.

A study of the making, handling, and marketing of lacto, ices, and ice cream. Elective.

Prerequisite—Dairying 52. *1 Lec., 1 Lab. per week. 2d S.*

62. Judging Dairy Products. Prof. Rasmussen. Dairy Bldg.

Practice in judging milk, cream, butter, cheese and ice cream. Elective.

Prerequisites—Dairying 52, 53, 54. *1 Lec., 1 Lab. per week. 2d S.*

64. Dairy Research. Prof. Rasmussen. Dairy Bldg.

A study of the work of the experiment stations and other dairy literature. Elective.

Prerequisite—6 credit hours in Dairying. *2 Rec. per week. 2d S.*

DRAWING.

PROF. HUDDLESTON, MR. LATON.

These subjects are of an industrial and cultural nature and include the mathematical, architectural and free-hand branches of the subject.

Recitation or lecture requires one hour in the class room with assigned work to be done outside. Drawing period requires a minimum of two and one-half hours in the drafting room.

Partial credit may be given for work done in preparatory schools if the work is satisfactory to the department. In order to get credit the student must submit for examination the work done in the preparatory school. No college credit will be given for work submitted for entrance.

Students are advised not to purchase drawing materials before consultation with the drawing instructor.

51. Engineering Drawing. Mr. Laton. 3–52 D.H.

A subject devoted to the fundamentals of engineering drawing and includes free-hand lettering; the use of drawing instruments; inking; tracing; orthographic projection as a study of the relation of different views of an object; and isometric and oblique projection as a study in the pictorial representation of an object. Text used is "Engineering Drawing" by French. For Engineering and Mechanic Arts Freshmen.

2 drawing periods per week. 1st S.

54. Agricultural Drawing.

Prof. Huddleston and Mr. Laton. 3–52 D.H.

Instruction in this subject includes drafting room exercises in free-hand lettering; the use of drawing instruments; projection drawing as a study of the relation of different views of a given object or structure; isometric drawing as a study in pictorial representation; together with the drawing of plans and elevations of simple farm structures. Text-book study is given to farm building construction, heating, lighting and ventilation, including necessary bills of materials and approximate cost of construction. Text used is "Farm Structures" by Ekblaw. For Agricultural Freshmen. *2 drawing periods per week. 2d S.*

56. Descriptive Geometry. Mr. Laton. 3–52 D.H.

An application of the principles of descriptive geometry to the solution of problems in points, lines, planes and solids; including practical problems on bridge beams, rafters, piping, etc. Text used is "Descriptive Geometry" by Miller. For Electrical and Mechanical Freshmen.

Prerequisites—Drawing 51 and Mathematics 53.

1 Lec.; 2 drawing periods per week. 2d S.

57. Machine Drawing. Mr. Laton. 2–39 D.H.

Detail and assembly drawing of machines and machine parts; making of blue-prints; instruction in drafting room practice and standards. For Electrical and Mechanical Sophomores.

Prerequisite—Drawing 51. *3 drawing periods per week. 1st S.*

58. Descriptive Geometry. Mr. Laton. 3–52 D.H.

An application of the principles of descriptive geometry to the solution of problems in points, lines, planes and solids; including practical problems arranged to meet the needs of Mechanic Arts Students. Text used is "Descriptive Geometry" by Miller. For Mechanic Arts Freshmen.

Prerequisites—Drawing 51 and Mathematics 53.
1 Lec.; 2 drawing periods per week. 2d S.

62. Machine Drawing. Mr. Laton. 2–39 D.H.

Detail and assembly drawing of machines and machine parts; making of blue-prints; instruction in drafting room practice and standards with a brief study of cams and gears. For Mechanic Arts Sophomores.

Prerequisite—Drawing 51. *3 drawing periods per week. 2d S.*

63. Free-hand Drawing. Prof. Huddleston. 3–55 D.H.

Pencil drawing from geometrical models as a study of proportion, form and free-hand perspective, followed by pencil and charcoal sketching from plaster casts of historic ornament and antique sculpture. Elective for all students. *2 drawing periods per week. 1st S.*

63a. Advanced Free-hand Drawing. Prof. Huddleston. 3–55 D.H.

A continuation of charcoal drawing from the antique with special work to meet the needs of the students in pen and ink sketching and rendering and modeling in clay from relief ornament and sculpture. Elective for all students.

Prerequisite—Drawing 63; 64 or 69. 2 drawing periods per week. 1st. S.

64. Free-hand Drawing. Prof. Huddleston. 3–55 D.H.

Same as Drawing 63. *2 drawing periods per week. 2d S.*

64a. Advanced Free-hand Drawing. Prof. Huddleston. 3–55 D.H.

Same as Drawing 63a. *2 drawing periods per week. 2d S.*

NOTE.—The above subjects of Drawing 63, 63a, 64, and 64a are of special value to students who expect to enter the field of teaching, nature study or biological research and are elective for all students subject to such conditions as their respective divisions and the Head of the department of drawing may prescribe.

65. Architectural Drawing. Prof. Huddleston. 2–39 D.H.

Drafting room exercises devoted to an analytical study of house plans and modern methods of building construction followed by quarter-inch scale working drawings with necessary scale and full-size details for a small frame house designed by the student with reference to local conditions. For Mechanic Arts Juniors.

Prerequisites—Drawing 51 and Shop 60.

2 drawing periods per week. 1st S.

66. Architectural Drawing.

Prof. Huddleston and Mr. Laton. 2–39 D.H.

A continuation of Drawing 65 with special attention given to interior, exterior and framing details followed by a brief study of sheet metal and ornamental iron work. For Mechanic Arts Juniors.

Prerequisite—Drawing 65. *2 drawing periods per week. 2d S.*

67. House Planning. Prof. Huddleston. 2–39 D.H.

Instruction is given in free-hand lettering; the use of drawing instruments; and projection drawing as a study of the relation of views of a given object or structure; together with the drawing and an analytical study of house plans with special reference to local conditions. For Home Economics Freshmen. *2 drawing periods per week. 1st S.*

68. House-Structure. Prof. Huddleston. 2–39 D.H.

A subject dealing with the house-structure considered from the standpoint of economics and of architecture. Lectures and recitations devoted to the study of the relation of the house plan to home making; to the individual family; individual site, garden and accessory buildings; supplemented by the preparation of working drawings and details of a house designed by the student to conform to specified requirements. For Home Economics Freshmen.

Prerequisite—Drawing 60. Parallel—Home Economics 2.

1 Lec.; 1 drawing period per week. 2d S.

69. Free-hand Drawing. Prof. Huddleston. 3–55 D.H.

Pencil drawing from geometrical models as a study of proportion, form and free-hand perspective, followed by pencil and charcoal sketching from plaster casts of historic ornament and antique sculpture. For Home Economics Sophomores. *2 drawing periods per week. 1st S.*

70. Color and Design. Prof. Huddleston. 3–55 D.H.

The first half of the semester will consist of lectures on color theories; harmonies and qualities based on spectral colors and supplemented with studio work with water-color.

The second half of the semester will consist of lectures on the principles of design, supplemented by studio work of color problems applicable to home decorations and costume design.

The object of this subject is to give to students a working knowledge of color such as will help them to express themselves appropriately in their clothing as well as develop good taste in color selections for home decoration. For Home Economics Sophomores.

Prerequisites—Drawing 63; 64 or 69.

1 Lec.; 1 drawing period per week. 2d S.

72. Practical Mathematics. Mr. Laton. 2–49 D.H.

The instruction in this subject includes useful applications of algebra, geometry and the first principles of trigonometry and is directly related to practical problems the student will meet after he has finished his course. For Mechanic Arts Seniors.

Prerequisite—Drawing 66. *1 Rec. per week. 1st S.*

ECONOMICS.

PROF. SMITH, MR. HAM.

1. Elementary Economics. Prof. Smith. 204 Lib.

This subject is designed to introduce the student into the broad field of economics: the kind and nature of wealth; its distribution among producers in the form of rent, wages, interest and profits; the part played by nature, by labor, and by capital in wealth production; the field of organized labor; the forms and relative advantages of different types of business organization, including corporations and trusts; the subject of markets and the forces which determine prices; the principles of credit, banking and foreign exchange; the tariff and taxation.

Two sections: one for Agricultural and Engineering Seniors; the other for Arts and Science and Mechanic Arts Sophomores.

2 Lec., 1 Rec. per week. 1st S.

2. Geography of Commerce. Prof. Smith. 201 Lib.

This subject gives rather wide information regarding the facts and principles of commerce, and the commercial development of nations. The importance of natural physical conditions as determinants of commerce is emphasized, as well as that of transportation and exchange facilities. Ports and ocean trade routes are also considered. The more important commodities of commerce are studied and the regions of their production, their markets and prices. Finally a comparison is made of the principal commercial countries of the world. For Arts and Science Freshmen and Sophomores.

2 Lec., 1 Rec. per week. 2d S.

4. Money and Banking. Prof. Smith. 204 Lib.

A study of the principles of money; coinage and coinage laws; legal tender; the relation of money and prices; bimetallism; the kinds of banks and the services they render; the national banking systems of this and other countries, including our new Federal Reserve System. Elective for Arts and Science Juniors and Seniors and for Agricultural and Engineering Seniors.

Economics 4 and 6 are given in alternate years. Economics 4 will be given in 1916–1917.

Prerequisite—Economics 1. *2 Lec., 1 Rec. per week. 2d S.*

5. Labor Problems. Prof. Smith. 204 Lib.

This subject is concerned primarily with the problems of organized labor; strikes and their causes, lock-outs, boycotts, the open and closed shop, minimum wage, settlement of disputes by arbitration and other means; compensation for industrial accidents, and labor legislation. Some attention is given in this subject to such organizations as the American Federation of Labor and the Industrial Workers of the World, their ideals, aims and methods. Elective for Arts and Science Juniors and Seniors and Agricultural Seniors.

Economics 5 and 9 are given in alternate years. Economics 5 will be given in 1916–1917.

Prerequisite—Economics 1. *3 Rec. per week. 1st S.*

6. Public Finance and Taxation. Prof. Smith. 204 Lib.

The subject-matter has to do with the costs of conducting governments, the methods of raising the necessary funds, including the great problems of taxation, the kinds of taxes, and the way they are distributed. Property, income and inheritance taxes, tariffs and internal revenue duties, the single tax and progressive taxes are considered. Elective for Arts and Science Juniors and Seniors and Agricultural and Engineering Seniors.

Economics 4 and 6 are given in alternate years. Economics 6 will be given in 1917–1918.

Prerequisite—Economics 1. *1 Lec., 2 Rec. per week. 2d S.*

8. Agricultural Economics. Prof. Smith. 204 Lib.

Economic problems in agriculture, such as prices of farm products, marketing, the produce exchanges, and speculation, co-operative organizations and rural credit, constitute the work of the semester. In addition, each member of the class is expected to make a special individual study of some topic in the field. Required for Agricultural Seniors. Elective for Arts and Science Juniors and Seniors.

Prerequisite—Economics 1. *3 Lec. per week. 2d S.*

9. Corporation Finance. Prof. Smith. 204 Lib.

A study of the methods used to finance corporations; the various types of stocks and bonds; stock exchanges; underwriting; government regulation of corporations. Elective for Arts and Science Juniors and Seniors and Agricultural Seniors.

Economics 5 and 9 are given in alternate years. Economics 9 will be given in 1917–1918.

Prerequisite—Economics 1. *3 Rec. per week. 1st S.*

Economics 13. Business Accounting. Mr. Ham. 107 T.H.

A study of the fundamental principles of accounting, first in private or individual business, then the partnership, and closing with the corporation. Interpretation of accounts, business statements and records. The subject is intentionally made to cover a broad field that it may be of the greatest service to students from all three divisions, both men and women. Elective for Arts and Science Sophomores and Juniors, and for Seniors from all divisions.

2 Rec., 1 Lab. per week. 1st S.

Economics 14. Cost-Accounting. Mr. Ham. 107 T.H.

The study of cost-accounting as it operates in a modern manufacturing concern. The student handles and becomes familiar with the best cost-keeping forms and records. Careful study is made of costs, especial attention being given to overhead expense or burden, including the problems of depreciation and idle factor time. It is presumed to be a more professional subject than Economics 13 on which it is based. Elective for Arts and Science Sophomores and Juniors, and for Seniors from all divisions.

Prerequisite—Economics 13. *2 Rec., 1 Lab. per week. 2d S.*

DEPARTMENT OF EDUCATION AND PSYCHOLOGY.

PROF. SIMMERS.

The training of teachers for high schools is recognized as being one of the important functions of New Hampshire College. In order to do this more adequately a department of education and psychology has been established which has as its aims:

1. To offer prospective high-school teachers, principals, and superintendents the necessary technical training for their profession.

2. To present educational history and problems in their more philosophic and scientific aspects so as to be valuable to all college students whether they become teachers or not.

To this end, it is expected that all students intending to teach will elect at least the following subjects in the department of education and psychology, making a total of thirteen hours,—Education 1 or 3 or 6, and 2 and 5, Psychology 52 and 53.

The prospective teacher should also take either the general or teacher's course in agriculture, the manual arts course, or the course in home economics. Or, if registered in the Arts and Science division, he should elect a major and one or two minors in its several departments. The aim should be to attain as intensive and extensive scholarship as possible during the four years spent in college.

Education

PROF. SIMMERS.

***1. History of Education.** Prof. Simmers. 102 T.H.

Before and during the Middle Ages. An attempt is made to show the relationship between the industrial, intellectual, social, philosophic, and religious ideals of the times, and the varying conceptions of aim, method, curricula, and organization of educational agencies. Required of Agricultural Juniors. Elective for all other students. Lectures, assigned readings and discussion. Sophomore subject. *2 Rec. per week. 1st S.*

***3. History of Education.** Prof. Simmers. 102 T.H.

Modern Period. This subject is quite similar to Education 1 in aim and method of treatment. It deals with the progress of society and related educational problems from the time of Comenius (beginning of seventeenth century) to the present time. It also attempts to show the origin and evolution of present theory and practice in education. Required of Agricultural Juniors. Elective for all other students. Lectures, assigned readings and discussion. Sophomore subject.
2 Rec. per week. 1st S.

4. School Hygiene. Prof. Simmers. 102 T.H.

The physical welfare of the pupil is considered in relation to his moral, social and intellectual development. Hygiene of play, study, work, daily programs, the selection of school building site, heating, ventilation, medical inspection, communicable diseases, detection and treatment of defects of the senses, laws of fatigue and its relief and prevention, etc., are studied. Required of Manual Arts Juniors and Agricultural Seniors. Elective for all other students. Lectures, assigned readings and discussion. Junior subject. *2 Rec. per week. 2d S.*

* Education 1 and 3 are given in alternate years. Education 1 is given in 1916–1917.

5. Secondary Education. Prof. Simmers. 102 T.H.

A systematic study of secondary school problems is made. Some of the topics considered are: The proper place and function of the high school, its relation to the grades, college and practical life; methods of instruction, program of studies, examinations and promotions, educational values of the various studies, qualities of an efficient teacher, and relation to the various elements of the school community. Each student will be required to make systematic observations in schools near Durham. Required of Agricultural and Manual Arts Juniors. Elective for all other students. Lectures, assigned readings and discussion. Senior subject. *3 Rec. per week. 1st S.*

6. History and Theory of Industrial Education.
Prof. Simmers. 102 T.H.

Some of the topics considered are: Primitive industry and educational practice, Industrial activity in the monasteries, the apprenticeship system, the Fellenberg Institute at Hofwyl, the manual training, agricultural, and home economics movements; Federal and state legislation concerning industrial education, vocational guidance. Typical industrial, trade, evening, and continuation schools, of the United States will be studied. For Manual Arts Seniors. Elective for all other students. Lectures, assigned readings and discussion. Senior subject. *2 Rec. per week. 2d S.*

***7. Principles of Education.** Prof. Simmers. 102 T.H.

In this subject a general background for educational thought and practice is sketched. The biological, psychological, social, and ethical bases of education are considered. The aim is to give underlying principles and to show how they should function in the work of the grades and the high school. The subject is fundamental for those students intending to become principals or superintendents of schools. Elective for all students. Lectures, assigned readings and discussion. Senior subject.

Prerequisite—Psychology 52. *3 Rec. per week. 1st S.*

***9. Administration and Supervision.** Prof. Simmers. 102 T.H.

This subject is designed for students who contemplate engaging in administrative or supervisory work. It aims at a systematic study of organization and management of school systems, promotion of pupils, standards of efficiency, powers and duties of the board of education, school law, school finance, etc. Elective for all students who have taken the other subjects in education. Lectures, assigned readings and discussion. Senior subject. *2 Rec. per week. 1st S.*

Psychology 52, 53. *See* page 124.

* Education 7 and 9 are given in alternate years. Education 7 is given in 1916-1917.

ELECTRICAL ENGINEERING.

PROF. HEWITT, ASST. PROF. HITCHCOCK.

1. **Dynamo Electric Machinery.** Prof. Hewitt. 1–29 D.H.

This subject includes a general study of the various electrical quantities such as electromotive force, current, resistance, permeability of iron; the use of standard measuring instruments; direct and alternating current dynamos and motors including elementary theory. A large number of practical problems illustrate the applications of the above. One exercise per week is devoted to laboratory experiments illustrating the practical application of theory. For Electrical and Mechanical Juniors.

Prerequisites—Physics 52 and Mathematics 56.

3 Rec., 1 Lab. per week. 1st S.

2. **Dynamo Electric Machinery.** Asst. Prof. Hitchcock. 1–26 D.H.

A continuation of Electrical Engineering 1. A study of electrical measuring instruments, cells, batteries, electrolysis, electroplating, electrotyping, the elements of photometry and electric illumination, inductance, capacity, and elementary alternating currents. One exercise per week is devoted to laboratory experiments illustrating the practical application of theory. For Electrical and Mechanical Juniors.

Prerequisite—Electrical Engineering 1. 3 Rec., 1 Lab. per week. 2d S.

3. **Telegraph and Telephone.** Asst. Prof. Hitchcock. 1–26 D.H.

A study of the acoustic and electrical principles of telephony, transmitting and receiving apparatus, magneto and common-battery switchboards and accessories, selective party-line systems, intercommunicating systems, overhead and underground construction, phantom, simplex, and composite circuits, transpositions, etc. The principles of telegraphy, sounders, repeaters, etc. Wireless telegraphy and telephony. Automatic devices, electric signaling for purposes of alarms, railroads, etc. Elective. *1 Rec. per week. 1st S.*

6. **Application of Electricity to Agriculture.** Prof. Hewitt. 1–29 D.H.

Arranged for and adapted to students taking agriculture. The subject consists of a general study of the electric dynamo and motor, method of connecting same to the supply circuit and the care and operation of each; a general study of simple problems in transmission, methods of wiring for electric power and lighting; the telephone including the general principles upon which it operates and different systems of installation; electric bell wiring and signaling apparatus; simple water power developments and equipments; electrical utensils for domestic use, etc. Elective. *2 Rec., 1 Lab. per week. 2d S.*

7. History of Electrical Engineering. Prof. Hewitt. 1–29 D.H.

A series of lectures giving a brief history of electrical engineering and outlining some of the advantages of this profession. This series of lectures has been planned in order to help a student in the choice of his course after his Freshman year. Elective without credit. For Electrical and Mechanical Freshmen. *1 Lec. per week. Last half 1st S.*

9. Industrial Electricity. Prof. Hewitt. 1–29 D.H.

Arranged for and adapted to students taking the Mechanic Arts Course. Open only to Seniors in the Mechanic Arts Course.
2 Rec., 1 Lab. per week. 1st S.

11. Electrical Engineering Practice. Asst. Prof. Hitchcock. 1–26 D.H.

A study of the properties of periodic curves, the effects of inductance and capacity, the use of complex quantities, and a more detailed study of generators, motors, transformers, converters, and other electrical apparatus. For Electrical Seniors.
Prerequisite—Electrical Engineering 2. 4 Rec. per week. 1st S.

12. Electrical Engineering Practice. Prof. Hewitt. 1–29 D.H.

A continuation and completion of Electrical Engineering 11. Hydro-electric developments including the design of reinforced concrete dams and power houses and the general subject of water-power engineering; high tension power transmission; design of transmission lines and distributing systems; selection of apparatus for generating stations and distributing systems; lightning protection. For Electrical and Mechanical Seniors.
Prerequisite—Electrical Engineering 11. 4 Rec. per week. 2d S.

14. Electric Railways. Asst. Prof. Hitchcock. 1–26 D.H.

The practicability of construction from an economic standpoint; determination of the size, type, and seating capacity of cars; track location; train schedules; methods of control; train resistance; speed-time and current-time curves; selection of motors; the feeder system; electrolysis; power station and substation location; storage batteries; electric track switches; etc. Illustrated by problems. For Electrical Seniors. *2 Rec. per week. 2d S.*

15. Electrical Laboratory.
Prof. Hewitt, Asst. Prof. Hitchcock. Basement D.H.

An advanced series of experiments. A written report will be required for which one additional credit hour will be given. For Electrical Seniors. *2 Lab., 3 Hours' Credit per week. 1st S.*

16. Electrical Laboratory.
Prof. Hewitt, Asst. Prof. Hitchcock. Basement D.H.

A continuation of Electrical Engineering 15, with experiments of a more advanced nature. A written report will be required for which one additional credit hour will be given. For Electrical Seniors.

2 Lab. per week, 3 Hours' Credit. 2d S.

18. Thesis. Prof. Hewitt, Asst. Prof. Hitchcock.

A deposit of fifteen dollars to cover any damage done to instruments, apparatus, etc., is required in this subject. Any unexpended balance is refunded at the close of the college year. Where apparatus is constructed as a part of a thesis, it shall remain the property of the department. Optional with head of department. For Electrical Seniors.

1 Rec., 2 Lab. per week. 2d S.

21. Industrial Electricity. Prof. Hewitt. 1–29 D.H.

A careful study of the principles and methods employed in electrical measurements; resistance of wire and batteries; current measurement by ammeters and electrolysis; the use of electrical measuring instruments; a series of laboratory experiments specially arranged to meet the requirements of chemical engineers. A brief study will be made of the dynamo, motor, transformer, primary and secondary batteries, arc and incandescent lamps and the general principles of electrical distribution. Experiments in electrolysis, electrical furnaces, reduction of metals, etc., are provided. For Chemical Seniors.

2 Rec., 1 Lab. per week. 1st S.

22. Industrial Electricity. Prof. Hewitt. 1–29 D.H.

A continuation of Electrical Ehgineering 21, but more advanced in nature. For Chemical Seniors.

Prerequisite—Electrical Engineering 21.

2 Rec., 1 Lab. per week. 2d S.

24. Design of Electrical Machinery. Asst. Prof. Hitchcock. 1–28 D.H.

A study of the design of the more important electrical machines, including the calculation of the dimensions of the machine, both electrical and mechanical, and the predetermination of its performance from the dimensions. For Electrical Seniors.

Prerequisite—Electrical Engineering 11. 2 Lab. per week. 2d S.

26. Illuminating Engineering. Asst. Prof. Hitchcock. 1–26 D.H.

A theoretical discussion of the principles of illumination and the application of these principles to concrete examples. For Electrical Seniors who do not take Electrical Engineering 18. Elective for other Electrical Seniors. *2 Rec. per week. 2d S.*

27. Contractors and Specifications. Prof. Hewitt. 1–29 D.H.

The laws and forms of engineering contracts; standard specifications for materials of construction and apparatus. Elective for Mechanical and Electrical Seniors. *1 Rec. per week. 1st S.*

ENGLISH.

PROF. RICHARDS, PROF. SCOTT, ASST. PROF. SCUDDER.

51. English Composition. I Prof. Richards. 205 T.H.
II Asst. Prof. Scudder. 208 T.H.

In this subject the student is taught to express himself in clear and concise English. He is drilled in the principles of rhetoric, is given constant practice in the writing of themes, and is required to make monthly reports on his readings in general literature. For all Freshmen. *3 Rec. per week. 1st S.*

52. English Composition. I Prof. Richards. 205 T.H
II Asst. Prof. Scudder. 208 T.H

A continuation of English 51.
Prerequisite—English 51. *3 Rec. per week. 1st S*

53. Advanced Composition and Literary Criticism.
Prof. Richards. 205 T.H

This is a subject in advanced English composition, in which the various forms of writing, such as the essay, the short story, the business letter and book reviewing are treated. To supplement these exercises the student is required to read and criticize intelligently the writings of at least one noted prose writer and one poet, embodying the results in a carefully prepared essay at the close of the semester. For Mechanic Arts Sophomores. Elective for Arts and Science Sophomores and Juniors.
Prerequisites—English 51 and 52. *3 Rec. per week. 1st S*

54. Introduction to English Literature. Prof. Richards. 205 T.H

A general survey of English literature from the ninth to the twentieth century. To one who intends to teach English it is of fundamental importance. Lectures, recitations and outside reading constitute the work of the semester. Elective for Freshmen, Sophomores and Juniors.
Prerequisite—English 51. *3 Rec. per week. 2d S*

***55. The English Novel.** Prof. Richards. 205 T.H

The historical development of the English novel and the chief characteristics of modern fiction are studied in this class. Lectures, recitations and extensive outside reading constitute the work of the semester. Elective for Arts and Science and Mechanic Arts Juniors and Seniors.
Prerequisites—English 51 and 52. *3 Rec. per week. 1st S*

56. Argumentation and Debating. Prof. Richards. 205 T.H.

This subject offers training in the fundamental principles of oral debate and written argumentation, acquaints the student with the laws of parliamentary procedure, and introduces him to the rules and customs of state and national legislatures. An essential part of the study—in some respects the most valuable feature—is the practice in formal and extemporary debate, such debates being held at least once a week throughout the semester. Elective for Sophomores, Juniors and Seniors.

Prerequisites—English 51 and 52. *3 Rec. per week. 2d S.*

***57. Modern English Poetry,** Prof. Richards. 205 T.H.

A study is made of the great poems of English literature written between 1790 and 1890. While special attention is given to the poetry of Wordsworth, Tennyson and Browning, considerable outside reading is required in the works of Shelley, Keats, Rossetti, Arnold and other poets of the nineteenth century. Elective for Arts and Science and Mechanic Arts Juniors and Seniors.

Prerequisites—English 51 and 52. *3 Rec. per week. 1st S.*

58. Elizabethan Drama. Asst. Prof. Scudder. 208 T.H.

A study of the Elizabethan dramatists, exclusive of Shakespeare, from Lyly to the Closing of the Theaters. Constant reading of the plays, with written criticisms and reports, is required. Elective for Sophomores, Juniors and Seniors.

Prerequisites—English 51 and 52. *3 Lec. per week. 2d S.*

59. Chaucer. Prof. Richards. 205 T.H.

Lectures upon the life and times of Chaucer will be given, and the *Canterbury Tales* will be read and discussed in class. At the close of the study each student will hand in a thesis embodying the results of independent investigation of Chaucerian literature. Elective for Arts and Science Seniors.

Prerequisites—English 52 and 54. *3 Rec. per week. 1st S.*

60. American Literature. Prof. Scott. 202 Lib.

Lectures and extensive outside reading. Elective for Arts and Science and Mechanic Arts Juniors and Agricultural Seniors.

Prerequisites—English 51 and 52. *4 Rec. per week. 2d S.*

61. Modern English Prose. Prof. Richards. 205 T.H.

A study of English prose, exclusive of fiction, in the nineteenth century. Special attention will be paid to the writings of Lamb, Macaulay, Carlyle, Newman, Arnold, Ruskin and Frederic Harrison.

Lectures will be given, and extensive outside reading and written reports at frequent intervals will be required. Elective for Arts and Science Juniors and Seniors.

Prerequisites—English 51 and 52. *3 Lec. per week. 1st S.*

62. Shakespeare's Plays. Prof. Richards. 205 T.H.

A study of all of Shakespeare's plays. Recitations and occasional dramatic representations of famous scenes. A large amount of reading required. Elective for Arts and Science Juniors and Seniors.

Prerequisites—English 51 and 52. *3 Rec. per week. 2d S.*

63. Writing for Publication. Asst. Prof. Scudder. 208 T.H.

A practical study of the preparation of articles for the newspapers and magazines. The student is taught to select the essential and present it tellingly. It is for all whose vocation will demand frequent writing for publication, and as a preparation in part for those who intend to take up newspaper work after graduation. It does not cover the entire field of journalism, but the student will be instructed in the duties of a reporter and be given constant practice in writing news stories. Elective for those who have attained a grade of C or higher in English 52.

Prerequisites—English 51 and 52 (with the added provision indicated above). *3 Rec. per week. 1st S.*

ENTOMOLOGY.

PROF. O'KANE, MR. CLEVELAND.

1. Principles of Economic Entomology. Prof. O'Kane. 213 T.H.

The relation of the structure and classification of insects to methods of insect control. The preparation and application of insecticides. Spray machinery and appliances. For Agricultural Juniors. Elective for Arts and Science Sophomores, Juniors and Seniors.

2 Rec., 1 Lab. per week. 1st S.

2. Applied Economic Entomology. Mr. Cleveland. 213 T.H.

The application of methods of insect control to typical injurious species. Studies in the life histories and habits of important insect pests of orchard, garden and field crops. Elective for Agricultural Juniors and for Arts and Science Sophomores, Juniors and Seniors.

Prerequisite—Entomology 1. *2 Lec., 1 Lab. per week. 2d S.*

3. Insects of Domestic Animals. Mr. Cleveland. 213 T.H.

The insect enemies of domestic live stock; their life histories, habits and means of control. Adapted especially for students in Animal

Husbandry. Elective for Agricultural Seniors and for Arts and Science Juniors and Seniors.

Prerequisite—Entomology 1. *2 Lec. per week. 1st S.*

4. **Household Insects. Medical Entomology.**
Prof. O'Kane, Mr. Cleveland. 213 T.H.

The life histories, habits and means of control of insects of the household and of stored products. The relation of insects to disease. Adapted especially for students in Home Economics. Elective for Arts and Science Sophomores, Juniors and Seniors, and for Agricultural Juniors and Seniors. *2 Lec. per week. 2d S.*

5. **Advanced Economic Entomology.** Prof. O'Kane. 213 T.H.

Detailed studies of problems involved in applied entomology. The literature of economic entomology. Investigational methods. Practice in arranging projects. Original investigations in the life history and habits of one or more injurious species. Adapted for advanced students. Elective for Agricultural Seniors and for Arts and Science Juniors and Seniors. Open to students only by permission of head of department. Credit and hours to be arranged. *1st S.*

6. **Advanced Economic Entomology.** Prof. O'Kane. 213 T.H.

Continuation of Entomology 5. *2d S.*

FORESTRY.

PROF. WOODWARD, MR. GAMASH.

51. **Principles of Forestry.** Prof. Woodward. 209 M.H.

This subject is intended to give the student a general knowledge of forestry; relation to forests of soil, moisture, light and climatic conditions; the important systems of treating woodlands practised in Europe and the United States; the habits of important economic timber trees and the character and uses of these woods; the preparation of forest maps and working plans, including rough estimates of standing timber and the rate of growth of different stands; the artificial regeneration of forests by seeding and planting; forest fires; the forest regions of the United States; the practice of foresty by the government and states. For all Agricultural Juniors except those in the Forestry Course. Elective for other students, except those taking Forestry 55.

2 Lec., 1 Lab. per week. 1st S.

52. **Silviculture.** Prof. Woodward. 209 M.H.

The establishment of forests through artificial regeneration; value of different species; seed collecting; testing and storage; nursery work;

direct seeding; planting; care of plantations; cost of establishing plantations; planting plans. Supplemented by actual nursery and planting work. For Forestry Juniors. Elective for other students.

Prerequisite—Forestry 55. *2 Lec., 1 Lab. per week. 2d S.*

53. Dendrology. Prof. Woodward. 209 M.H.

A study of the habits, distribution and characteristics of the native trees and important introduced trees of the Northeastern States, in both summer and winter conditions, and with particular reference to the prominent and constant features which lead to ready identification; and a general study of the important timber trees of the United States, including the structure of their woods. For Forestry and Mechanic Arts Juniors. Elective for other students who have taken Botany 51 and 52. *3 Lec., 1 Lab. per week. 1st S.*

54. Forest Mensuration. Prof. Woodward. 209 M.H.

Methods of determining the contents and growth of individual trees and of whole forests by different units; use of log rules and the measurement of logs and felled trees; the measurement of standing trees; methods of timber estimating; study of growth in diameter; height, and volume; construction and use of volume and yield tables. This course calls for the use of forest instruments and actual practice in measuring trees and whole stands. For Forestry Juniors. Elective for other students. *2 Lec., 1 Lab. per week. 2d S.*

55. Silviculture. Prof. Woodward. 209 M.H.

A study of the life history of trees; the relation of the different species to light, moisture, soil, temperature and to each other in the forest; reproduction of trees, form and character of stands; the origin and determination of forest types; forest maps; relation of forests to streamflow; forest descriptions; the improvement of the forest through use and proper treatment; the various systems of cutting and reproducing forests by natural means as practised in Europe and the United States, supplemented by frequent woods practice and demonstrations. For Forestry Juniors. Elective for other students who are taking Forestry 53. *3 Lec., 2 Lab. per week. 1st S.*

56. Forest Management. Prof. Woodward. 209 M.H.

The economic principles underlying the management of forests; the calculation of present and future values of forest property based on productive power; financial considerations of forest management; taxation of forest land; preparation of working plans in Europe, India, and the United States. Includes collateral reading, writing on forestry subjects and discussions. For Forestry Seniors.

Prerequisites—Forestry 52, 53, 54, 55, 57 and 59.

2 Lec., 2 Lab. per week. 2d S.

57. Forest Protection. Prof. Woodward. 209 M.H.

Consideration of practical measures for the protection of forests from fire, insects, fungous diseases, grazing, trespass, and destructive lumbering; and an examination of the federal and state laws relating to forest interests. For Forestry Seniors.

Prerequisites—Forestry 52, 53, 54, and 55. 2 Lec. per week. 1st S.

58. Advanced Forestry. Prof. Woodward. 209 M.H.

Elective for Forestry Seniors.

Prerequisites—Forestry 52, 53, 54, 55, 57, and 59.

3 Lab. per week. 2d S.

59. Practice of Forestry. Prof. Woodward. 209 M.H.

Development and present status of forestry in different countries; the work of the federal government and its management of the national forests; state forest policies; the lumber industry in the United States; the application of forestry to different regions. For Forestry Seniors. Lectures and Special Readings.

Prerequisites—Forestry 52, 53, 54, and 55. 3 Lec. per week. 1st S.

60. Forest Utilization. Prof. Woodward. 209 M.H.

Advanced elective subject for Mechanic Arts Juniors or Seniors. Work to be arranged to meet the needs of individual students.

Prerequisite—Forestry 53. 3 Rec. per week. 2d S.

61. Advanced Forestry. Prof. Woodward. 209 M.H.

Work to be arranged according to the needs of individual students. Elective for Forestry Seniors.

Prerequisites—Forestry 52, 53, 54, and 55. 3 Rec. per week. 1st S.

FRENCH.

PROF. WHORISKEY, ASST. PROF. WHITMAN.

1. Elementary French. Asst. Prof. Whitman. 102 T.H.

Elements of French Grammar. Reading of simple stories; conversation and dictation. Elective for Arts and Science students.

3 Rec. per week. 1st S.

2. A continuation of French 1. Asst. Prof. Whitman. 102 T.H.

Elective for Arts and Science students. *3 Rec. per week. 2d S.*

3. French Prose. Prof. Whoriskey, Asst. Prof. Whitman. 107 T.H.

Reading and translation; composition. Elective for Arts and Science Sophomores. Freshmen who have offered French for admission are allowed to take French 3 and 4.

Prerequisite—French 2. *3 Rec. per week. 1st S.*

4. A continuation of French 3. Asst. Prof. Whitman. 107 T.H.

Prerequisite—French 3. *3 Rec. per week. 2d S.*

***5. French Literature of the Nineteenth Century.**

Asst. Prof. Whitman. 102 T.H.

Selections from Hugo, Balzac, Sand, Dumas père, Daudet, Gautier. Composition. Elective for Arts and Science students.

Prerequisite—French 4. *3 Rec. per week. 1st S.*

***6. A continuation of French 5.** Asst. Prof. Whitman. 102 T.H.

Elective for Arts and Science students.

Prerequisite—French 5. *3 Rec. per week. 2d S.*

***7. French Literature of the Seventeenth Century.**

Asst. Prof. Whitman. 102 T.H.

Corneille; Racine; Molière; Bossuet; Boileau; Mme. de Sévigné; La Fontaine. Composition. Elective for Arts and Science students.

Prerequisite—French 4. *3 Rec. per week. 1st S.*

***8. A continuation of French 7.** Asst. Prof. Whitman. 102 T.H.

Elective for Arts and Science students.

Prerequisite—French 7. *3 Rec. per week. 2d S.*

GEOLOGY.

PROF. JACKSON, MR. BATCHELDER.

51. Elementary Geology. Mr. Batchelder. 212 T.H.

The elements of geology. Special attention is given to local geology and excursions are made to various points of interest in the vicinity. For Agricultural Juniors. Elective for Mechanic Arts Juniors and Arts and Science Juniors and Seniors. *3 Rec. per week. 1st S.*

52. Historical Geology. Prof. Jackson. 212 T.H.

The development of the continents of the earth and the evolution and distribution of the animal and plant forms from the earliest times

* French 5 and 6 are to be given in 1916–1917 and in alternate years with French 7 and 8.

to the present. Recitations, lectures and laboratory work. Elective for Agricultural and Arts and Science Seniors.

Prerequisites—Zoölogy 51, 52 and Geology 51.

2 Rec., 1 Lab. per week. 2d S.

GERMAN.

PROF. WHORISKEY, ASST. PROF. WHITMAN.

1. Elementary German. Prof. Whoriskey. 107 T.H.

Elements of German grammar. Reading of simple stories; conversation; singing of German folk-songs. For Agricultural and Chemical Engineering Freshmen who have not offered German for admission. Elective for others. *3 Rec. per week. 1st S.*

2. Elementary German. Prof. Whoriskey. 107 T.H.

A continuation of German 1. For Agricultural and Chemical Engineering Freshmen who have not offered German for admission. Elective for others. *3 Rec. per week. 2d S.*

3. German Prose. Prof. Whoriskey. 107 T.H.

Reading and translation. For Chemical Engineering Sophomores. Elective for others. Freshmen who have offered German for admission are allowed to take German 3 and 4. *3 Rec. per week. 1st S.*

4. German Prose. Prof. Whoriskey. 107 T.H.

A continuation of German 3. Reading and Translation of Hanff's Lichtenstein and similar books. Elective.

Prerequisite—German 3. *3 Rec. per week. 2d S.*

***5. Goethe.** Prof. Whoriskey. 107 T.H.

His life and works. The following books are read and criticized: 1. Hermann und Dorothea; 2. Iphigenie; 3. Torquato Tasso; 4. Egmont; 5. Götz von Berlichingen; 6. Dichtung u. Wahrheit (in part); 7. Die Leiden des jungen Werters; 8. Faust, Part I. Elective for Arts and Science students.

Prerequisite—German 4. *3 Rec. per week. 1st S.*

***6. Goethe.** Prof. Whoriskey. 107 T.H.

A continuation of German 5. Elective for Arts and Science students.

Prerequisite—German 5. *3 Rec. per week. 2d S.*

*German 13 and 14 are to be given in 1916–1917, and German 5 and 6 are to be given in 1917–1918. German 7 and 8 are to be given in 1918–1919.

***7. Schiller.** Prof. Whoriskey. 107 T.H.

His life and works. The following books are read and criticized: 1. Wilhelm Tell; 2. Maria Stuart; 3. Die Jungfrau; 4. Die Braut von Messina; 5. Wallenstein; 6. Don Carlos; 7. Geschichte d. 30 jährigen Krieges; 8. Ballads. Elective for Arts and Science students.

Prerequisite—German 4. *3 Rec. per week. 1st S.*

***8. Schiller.** Prof. Whoriskey. 107 T.H.

A continuation of German 7. Elective for Arts and Science students.

Prerequisite—German 7. *3 Rec. per week. 2d S.*

†9. German Composition and Conversation.

Prof. Whoriskey. 107 T.H.

Elective for Arts and Science students. Both aural and oral training are given in German 9, 10, 11 and 12, and opportunity is given to teach under supervision. *3 Rec. per week. 1st S.*

***10. A continuation of German 9.** Prof. Whoriskey. 107 T.H.

3 Rec. per week. 2d S.

***11. German Composition and Conversation.**

Prof. Whoriskey. 107 T.H.

Elective. *3 Rec. per Week. 1st S.*

***12. A continuation of German 11.** Prof. Whoriskey. 107 T.H.

Elective. *3 Rec. per week. 2d S.*

†13. Sudermann. Prof. Whoriskey. 107 T.H.

The following books are read and criticized: 1. Frau Sorge; 2. Der Katzensteg; 3. Teja; 4. Heimat; 5. Johannes; 6. Frenssen's Jörn Uhl. Elective for Arts and Science students.

Prerequisite—German 4. *3 Rec. per week. 1st S.*

†14. Sudermann and His Contemporaries.

Prof. Whoriskey. 107 T.H.

A continuation of German 13.

Prerequisite—German 13. *3 Rec. per week. 2d S.*

16. Scientific German. Asst. Prof. Whitman. 107 T.H.

For chemical Engineering Sophomores. Textbook—Phillip's "Chemical German." *3 Rec. per week. 2d S.*

* German 13 and 14 are to be given in 1916–1917, and German 5 and 6 are to be given in 1917–1918. German 7 and 8 are to be given in 1918–1919.

† German 9 and 10 are to be given in 1916–1917 and in alternate years with German 11 and 12.

HISTORY.

PROF. SCOTT, PROF. SMITH.

In the subjects in history an important place is given to historical reading carried on in the reference room. In some cases a considerable part of the work is written.

1. History of Europe from 476 to 1492. Prof. Scott. 202 Lib.

Recitations and collateral reading. Elective for Arts and Science Freshmen and Mechanic Arts Juniors. *3 Rec. per week. 1st S.*

2. History of Europe from 1492 to 1715. Prof. Scott. 202 Lib.

Recitations and collateral reading. Elective for Arts and Science and Mechanic Arts Freshmen. *3 Rec. per week. 2d S.*

3. History of Europe from 1715 to 1815. Prof. Smith. 204 Lib.

Recitations and collateral reading. Elective for Arts and Science Sophomores.
Prerequisite—History 1. *3 Rec. per week. 1st S.*

4. History of Europe since 1815. Prof. Smith. 204 Lib.

Recitations and collateral reading. Elective for Arts and Science Sophomores.
Prerequisite—History 2 or History 3. *3 Rec. per week. 2d S.*

5. American History to 1801. Prof. Scott. 202 Lib.

Elective for Arts and Science Juniors and Mechanic Arts Seniors.
3 Rec. per week. 1st S.

6. Political and Constitutional History of the United States from 1801 to 1861. Prof. Scott. 202 Lib.

Elective for Arts and Science Juniors and Mechanic Arts Seniors.
3 Rec. per week. 2d S.

7. Political and Constitutional History of the United States since 1860. Prof. Scott. 202 Lib.

Elective for Arts and Science Seniors.
Prerequisite—History 6. *3 Rec. per week. 1st S.*

HOME ECONOMICS.

PROF. GOLDTHWAITE, ASST. PROF. REINER.

1. Personal Hygiene. Prof. Goldthwaite. 105 T.H.

A short study of the laws of health; the means of improving the physical and mental efficiency of the body; individual responsibility for race progress. Required of all women Freshmen.

1 Rec. per week. 1st S.

2. The House. Asst. Prof. Reiner. 105 T.H.

Its location, drainage. Outline house-plans. Wall and floor finishes. The plumbing, heating, lighting, and ventilation of the house. Labor-saving devices. Cleaning processes and care of furniture. Social forms and usages. For Home Economics Freshmen.

Prerequisite—Drawing 67.

Parallel—Drawing 68. *2 Rec. per week. 2d S.*

3. Elementary Cooking. Asst. Prof. Reiner. 105 T.H.

The location, ventilation and equipment of the kitchen. Fuels. The care of food. The technique of cooking, and the preparation of meals. Costs of foods prepared. For Home Economics Freshmen.

2 Lab. per week. 1st S.

4. Plain Sewing. Prof. Goldthwaite, Asst. Prof. Reiner. 105 T.H.

The fundamental stitches used in the making of household linens; the use of the sewing machine; the making of under-clothing; darning, patching, simple embroidery, crocheting. For Home Economics Freshmen. *1 Lab. per week. 2d S.*

6. Textiles. Prof. Goldthwaite, Asst. Prof. Reiner. 105 T.H.

The textile fibers: their sources, production and uses; study of their physical and chemical properties. Examination of the fibers and weaves of woven fabrics. Judging of textile fabrics in regard to durability, cost and suitability for household or for personal purposes. Laundering and cleaning fabrics.

Prerequisite—Chemistry 56. *1 Rec., 1 Lab. per week. 2d S.*

7. Foods, and Principles of Cooking.

Prof. Goldthwaite, Asst. Prof. Reiner. 105 T.H.

Composition and nutritive value of food-stuffs and of foods. Effects of heat and cold upon food-stuffs; food preservation and storage. Leavening agents. Laboratory practice in the principles of cooking. The cost and nutritive value of the foods prepared. Comparative economy of foods. For Home Economics Sophomores.

Prerequisites—Chemistry 56, Home Economics 3 or equivalent, high school Physics, or equivalent. *1 Rec., 2 Lab. per week. 1st S.*

8. Foods, and Principles of Cooking, Continued.
Prof. Goldthwaite, Asst. Prof. Reiner. 105 T.H.

Preparation and service of meals; cost per person. Entertainment of guests. For Home Economics Sophomores.

Prerequisite—Home Economics 7. 1 Rec., 2 Lab. per week. 1st S.

10. Clothing. Prof. Goldthwaite. 105 T.H.

Study of values in textiles, and in clothing. Choice of materials in regard to color, quality and cost as related to desired uses. Designing, drafting, cutting and making of garments. Use of patterns; care of clothing. Home Economics Juniors.

Prerequisites—Home Economics 4 and 6, Drawing 69 and 70.
3 Lab. per week. 2d S.

11. Principles of Human Nutrition. Prof. Goldthwaite. 105 T.H.

Composition of the body; its relation to the physical universe. The composition, digestion, absorption, assimilation and oxidation of food-stuffs. The physiological fuel value of food-stuffs. Methods of investigation employed in the study of human nutrition. The food requirements of the body as influenced by activity, size, age, sex. Problems throughout the semester. For Home Economics Juniors.

Prerequisites—Home Economics 8, Chemistry 57, Zoölogy 57.
3 Rec. per week. 1st S.

12. Nutrition and Dietetics. Prof. Goldthwaite. 105 T.H.

Continuation of Home Economics 11. Problems in dietary calculations. Comparative physiological fuel values of foods. Application of the principles of human nutrition in the adaptation of diet to varying physiological, social and economic conditions. For Home Economics Juniors.

Prerequisite—Home Economics 11. 2 Rec., 1 Lab. per week. 2d S.

13. House Decoration. Asst. Prof. Reiner. 105 T.H.

Applications of theory of color, and of design in house decoration. Selection of house furnishings; study of values; estimation of costs, and comparisons of sanitary and artistic furnishings. For Home Economics Juniors.

Prerequisites—Drawing 69, 70, Home Economics 2, 6.
2 Rec. per week. 1st S.

14. Household Chemistry. Prof. Goldthwaite. 105 T.H.

Chemistry of cleaning; chemistry of leavening agents. Antiseptics and disinfectants. Chemistry of the food-stuffs. Elective for Home Economics Juniors.

Prerequisites—Home Economics 12, Botany 55. 3 Lab. per week. 2d S.

18. History of Costume. Prof. Goldthwaite. 105 T.H.

Development of costume; comparison of primitive and historic costumes with modern dress; study of national dress. Elective for Home Economics Juniors.

Prerequisite—Home Economics 5. *2 Rec. per week. 2d S.*

19. Household Administration. Prof. Goldthwaite. 105 T.H.

Evolution of the home; standards of living; expenditure of the income; organization of the household. Household accounts. Care of the house and family; domestic service. Co-operative housekeeping. Home nursing. For Home Economics Seniors.

Prerequisites—Home Economics 10, 12, Economics 1, Zoölogy 58, Botany 55. *3 Rec. per week. 1st S.*

21. Original Problems. Prof. Goldthwaite. 105 T.H.

Problems may be in experimental cooking, dietetics, textiles, economics of family. Elective for Home Economics Seniors.

Prerequisites—Home Economics 12, and 10 or 14.
Parallel—Home Economics 19. *3 Lab. per week. 1st S.*

22. Original Problems. Prof. Goldthwaite. 105 T.H.

Continuation of Home Economics 21. *3 Lab. per week. 2d S.*

24. Teachers' Course. Prof. Goldthwaite. 105 T.H.

Development of Home Economics. Planning of courses especially for secondary schools; outlines of lessons and methods of presentation; selection of equipment. Elective for Home Economics Seniors.

Prerequisite—Home Economics 10, 12, 13, 19. *3 Rec. per week. 2d S.*

HORTICULTURE.

PROF. GOURLEY, ASST. PROF. WOLFF, MR. SCHERRER, MR. MACFARLANE.

NOTE.—The college has several hundred fruit trees which are available for the students in studying orchard operations. All types of spray machinery from the knapsack to the power sprayer are used in class work.

52. Vegetable Gardening. Mr. Scherrer. 202 M.H.

This subject is designed to give a working knowledge of the various phases of vegetable production. It includes a study of garden soils, germination and planting of seeds, selection of varieties with reference to the conditions of the state, construction and management of hot beds and cold frames, fertilizing, irrigation, packing and marketing of vegetables. For Agricultural Sophomores.

1 Lec., 1 Rec., 1 Lab. per week. 2d S.

53. Greenhouse Construction and Management.
Mr. Scherrer. 202 M.H.

This subject aims to familiarize the student with modern methods of greenhouse work and the more important plants grown under glass. Sorts, varieties, culture, marketing, and enemies of greenhouse plants are studied. Each student is required to do practical work in propagating, potting, watering, and ventilating. A study is made of the history and development of different types of greenhouses, including methods of heating and general management. Required in Horticultural Course, Junior year. Elective in other Agricultural Courses.

1 Lec., 1 Rec., 1 Lab. per week. 1st. S.

54. Practical Pomology. Asst. Prof. Wolff. 202 M.H.

A study of the fundamental problems of fruit growing, such as location, choice of site, kind and adaptability of soil for fruit growing, soil management, planting of orchards, pruning, sprays and spraying, thinning, harvesting and marketing. For Agricultural Sophomores.

2 Rec., 1 Lab. per week. 2d S.

55. Systematic Pomology and Commercial Orcharding.
Prof. Gourley. 202 M.H.

The first eight weeks of the semester are devoted to a study of the leading varieties of fruits and their adaptations, with special reference to New England conditions. During the remainder of the semester this subject deals with the management of commercial orchards, problems of marketing, packing, transportation and coöperation. Special study is given to the experimental data on maintaining soil fertility in the orchard and on other fundamental factors in orchard management. In the laboratory special instruction is given to the packing of apples for market and judging fruit. Required in Horticultural Course, Senior year. *3 Rec., 1 Lab. per week. 1st S.*

56. Landscape Gardening. Mr. Scherrer. 202 M.H.

A study of the principles involved in ornamental and landscape gardening. Special attention is given to the beautifying of home surroundings. Laboratory work consists in landscape design and practice in laying out and planting home and public grounds. Required in Horticultural Course, Junior year. Elective in other Agricultural Courses. *1 Lec., 1 Rec., 1 Lab. per week. 2d S.*

57. Evolution and Improvement of Plants. Prof. Gourley. 202 M.H.

The applications of the principles of evolution to the improvement of plants. Variation, selection and heredity as applied to the problems

of plant breeding in agricultural practice. Required in Horticultural and General Agricultural Courses, Senior year. Elective in other Agricultural Courses.

Prerequisites—Botany 51 and 52. *2 Rec. per week. 1st S.*

58. Nursery Management. Asst. Prof. Wolff. 202 M.H.

A study of the methods of propagation and the care of trees, shrubs and perennial plants in the nursery. Lectures, reference readings and practice. Required in Horticultural Course, Junior year. Elective in other Agricultural Courses. *2 Rec., 1 Lab. per week. 2d S.*

60. Floriculture. Mr. Macfarlane. 202 M.H.

A special study of the classification, history and development of the flowers and plants grown commercially and about the home, together with instruction and practice in their propagation and culture. Required in Horticultural Course, Junior year. Elective for others.

Prerequisites—Botany 51 and 52. *1 Rec., 1 Lab. per week. 2d S.*

62. Horticultural Seminar. Prof. Gourley. 202 M.H.

A review of the important horticultural literature and methods of investigational work. Required in Horticultural Course, Senior year. Elective in other Agricultural Courses.

One seminar meeting per week. 2d S.

65. Advanced Horticulture. Prof. Gourley. 202 M.H.

Special work in horticulture. May be taken by special arrangement with the head of the department. Prerequisites will depend on the work taken. Elective for Horticultural and General Agricultural Seniors.

Two to five exercises per week. Time to be arranged. 1st S.

66. Advanced Horticulture. Prof. Gourley. 202 M.H.

A continuation of Horticulture 65. Special arrangement must be made with the head of the department for this work. Elective for Horticultural and General Agricultural Seniors. Time and credit to be arranged.

Two to five exercises per week. 2d S.

68. Vegetable Forcing. Mr. Scherrer. 202 M.H.

A subject dealing with a study of special vegetables as grown under glass. Emphasis is placed upon the commercial phases of the work, including varieties, culture, style of packages, and marketing. Each student is required to grow crops from seeding to maturity. In addition, a study of systematic vegetable gardening is given. For Horticultural Juniors. Elective in other Agricultural Courses.

1 Lec., 2 Lab. per week. 2d S.

LATIN.

ASST. PROF. WHITMAN.

1. Livy (Book I). Asst. Prof. Whitman. 102 T.H.

Elective for Arts and Science students who have offered Advanced Latin for entrance. *3 Rec. per week. 1st S.*

2. Horace (Odes and Epodes). Asst. Prof. Whitman. 102 T.H.

Prerequisite—Latin 1. *3 Rec. per week. 2d S.*

MATHEMATICS.

ASSOC. PROF. MOORE, ASSOC. PROF. STECK, MR. BARTLETT.

51a. Algebra and Trigonometry. { I. Assoc. Prof. Moore. 211 T.H. / II. Assoc. Prof. Steck. 206 T.H.

The first half of the semester is devoted to a brief review of fundamental principles, a more advanced presentation of linear and quadratic equations, followed by an introduction to the theory of equations, determinants, variation and logarithms. The second half of the semester is given to trigonometry. For Agricultural and Mechanic Arts Freshmen. Elective for Arts and Science Freshmen.*

4 Rec. per week. 1st S.

51b. Trigonometry and Analytic Geometry. { I. Assoc. Prof. Moore. 211 T.H. / II. Assoc. Prof. Steck. 206 T.H.

The first ten weeks of this subject is devoted to plane and spherical trigonometry. During the remainder of the semester the student begins a study of the elements of plane analytic geometry. For Engineering Freshmen. Elective for Arts and Science Freshmen.*

4 Rec. per week. 1st S.

52. Analytic Geometry. { I. Assoc. Prof. Moore. 211 T.H. / II. Assoc. Prof. Steck. 206 T.H.

A continuation of Mathematics 51b, which combines with analytic geometry a number of topics traditionally treated in college algebra that depend on or are closely associated with geometric representation. It presents the elements of both plane and solid analytic geometry. Cartesian and polar coördinates, the straight line, circle, and the conic sections; special emphasis placed on methods of analysis as illustrated by loci problems. For Engineering Freshmen. Elective for Arts and Science Freshmen.

Prerequisite—Mathematics 51b. *4 Rec. per week. 2d S.*

* Arts and Science students who intend to take up the study of Analytic Geometry should elect Mathematics 51b and not Mathematics 51a.

53. Solid Geometry. Assoc. Prof. Moore. 211 T.H.

The elements of solid and spherical geometry including original demonstrations and the solution of numerical problems. For Engineering and Mechanic Arts Freshmen. Elective for Agricultural and Arts and Science Freshmen. *2 Rec. per week. 1st S.*

54. Surveying.
I. Assoc. Prof. Moore. 211 T.H.
II. Assoc. Prof. Steck. 206 T.H.
III. Mr. Bartlett. 208 T.H.

Recitations, field work and plotting; surveying with chain, compass, transit, sextant and plane table; adjustment, care and proper method of using these instruments; the methods of determining areas; levelling for profiles and contours; computing from field notes taken in connection with the work. For Agricultural and Mechanic Arts Freshmen. Elective for Arts and Science Freshmen.

Prerequisite—Mathematics 51a or 51b.

Two Rec. per week for the first half of the semester. Two field exercises per week for the remainder of the semester.

55. Calculus.
I. Assoc. Prof. Moore. 211 T.H.
II. Assoc. Prof. Steck. 206 T.H.

Differentiation of algebraic and transcendental functions with applications to physical and allied problems. The simple methods of integration. For Engineering Sophomores. Elective for Arts and Science Sophomores.

Prerequisite—Mathematics 52. *5 Rec. per week. 1st S.*

56. Calculus.
I. Assoc. Prof. Moore. 211 T.H.
II. Assoc. Prof. Steck. 206 T.H.

A continuation of Mathematics 55, including the determination of length, area, volume, mass, mean density, center of gravity, etc., by the methods of the integral calculus.

Prerequisite—Mathematics 55. *3 Rec. per week. 2d S.*

57. Differential Equations. Assoc. Prof. Steck. 206 T.H.

Devoted to the study of ordinary differential equations, especially those of the first and second orders, with applications to geometry, physics, and mechanics. Offered in alternate years. Given in 1915–1916.

Prerequisite—Mathematics 56. *2 Rec. per week. 1st S.*

58. Advanced Calculus. Assoc. Prof. Steck. 206 T.H.

A study of some of the more advanced topics of differential and integral calculus with applications to the solution of problems. Elective for Juniors and Seniors who have completed Mathematics 56. Offered in alternate years. *2 Rec. per week. 2d S.*

59. Theory of Equations. Assoc. Prof. Moore. 211 T.H.

Comprises the general properties of polynomials and equations, the relation between the roots and coefficients with applications to the symmetric functions of the roots, the transformation of equations, the solution of cubic, biquadratic, binominal, and reciprocal equations, the properties of the derived functions, the limits and the separation of the roots, and the solution of higher numerical and transcendental equations. Offered in alternate years. Given in 1916–1917.

Prerequisite—Mathematics 56. *2 Rec. per week. 1st S.*

60. History of Mathematical Science. Assoc. Prof. Moore. 211 T.H.

Designed to acquaint those who intend to teach mathematics with the development of algebra, geometry, trigonometry, analysis and calculus. Lectures, assigned readings and recitations. Offered in alternate years. Given in 1915–1916.

Prerequisite—Mathematics 56. *2 Rec. per week. 2d S.*

64. Theory and Practice of Surveying. Assoc. Prof. Moore. 211 T.H.

Arranged for Seniors in the Mechanical and Electrical Engineering Courses, in which a study is made of the engineer's transit, wye-level, and compass; the theory of their adjustment and their use.

The field work includes: first, preliminary practice until a reasonable degree of facility and precision is attained by each student in doing well a piece of work such as; differential levelling, or a land survey involving the ordinary measurements of lines and angles; second, a topographic survey of a tract of land for a contour map; computation of earthwork "cuts and fills"; survey for highway line; locating survey of a proposed railway line, including practice in staking out simple curves; solar observations with the engineer's transit for azimuth.

1 Rec., 1 field exercise per week. 2d S.

NOTE.—Students desiring to take Mathematics 57, 58, 59, or 60 should consult with the instructor before registering.

MECHANICAL ENGINEERING.

PROF. PORTER, ASST. PROF. MCKONE.

51. History of Mechanical Engineering. Prof. Porter. 2–45 D.H.

A brief history of the development of the steam engine and other mechanical inventions. Practical talk on engineering material, requirements and qualifications of an engineer. For Electrical Engineering or Mechanical Freshmen. Elective without credit.

1 Lec. per week last half of semester. 1st S.

52. Mechanics of Engineering. Prof. Porter. 2–45 D.H.

Principles of pure mechanics as applied to engineering structure involving composition forces, analytic and graphics. Conditions of equilibrium, center of gravity, moment of inertia, strength of materials, riveted joints. For Electrical and Mechanical Sophomores.

Mathematics 56 required as parallel course. 3 Rec. per week. 2d S.

58. Thermodynamics. Asst. Prof. McKone. 2–48 D.H.

A study of the laws of thermodynamics and the thermodynamic properties of steam and gases. Their application to steam, gasoline engines, theory of refrigeration, and injectors. Required for Electrical Engineering and Mechanical Engineering Juniors and Chemical Engineering Seniors.

Prerequisite—Mathematics 56. 3 Rec. per week. 2d S.

59. Mechanical Laboratory.
Prof. Porter, Asst. Prof. McKone. 0–24 D.H.

Physical tests of iron, steel, concrete, timber, calibration of instruments used in testing and efficiency of simple machines. For Electrical Engineering and Mechanical Engineering Juniors.

Prerequisite—Mechanical Engineering 52.
1 Rec., 1 Lab. per week. 1st S.

60. Mechanical Laboratory.
Prof. Porter, Asst. Prof. McKone. 0–24 D.H.

Analysis of coal, oil, gas, setting of valves, testing of water meters and hydraulic meters, calibration of a wier notch. Electrical Engineering and Mechanical Engineering Juniors. Continuation of Mechanical Engineering 59. *1 Rec., 1 Lab. per week. 2d S.*

62. Hydraulics. Prof. Porter. 2–45 D.H.

The mechanics of liquids, principle of fluid pressures, stability of structures, flow of liquids, methods and measurement of streams, and quantities of water by means of floats wiers and meters and the fundamental principles of hydraulic machinery. For Electrical Engineering and Mechanical Engineering Juniors.

Prerequisite—Mechanical Engineering 69. 3 Rec. per week. 2d S.

63. Materials of Construction. Prof. Porter. 2–45 D.H.

A study of the manufacture, properties and uses of iron, steel, brass, bronze, wood, brick, cement and concrete. For Electrical Engineering and Mechanical Engineering Juniors and Chemical Engineering Seniors.

Prerequisite—Mechanical Engineering 52. 3 Rec. per week. 1st S.

64. Machine Design. Asst. Prof. McKone. 2–48 D.H.

Study of the elements of machines, design of fastening joints, gearing, belting, lubrication, machine frames and attachments. The work in the drafting room consists of the actual design of cranes, punches and machine parts. For Electrical Engineering and Mechanical Engineering Juniors.

Prerequisite—Mechanical Engineering 69.

2 Rec., 2 Lab. per week. 2d S.

65. Mechanical Engineering Laboratory.

Prof. Porter, Asst. Prof. McKone. 0–24 D.H.

Tests of gasoline and steam engine pumps, air compressors, boilers and a study of their operation. Continuation of Mechanical Engineering 60. For Electrical Engineering and Mechanical Engineering Seniors. *1 Rec., 1 Lab. per week. 1st S.*

66. Mechanical Laboratory.

Prof. Porter, Asst. Prof. McKone. 0–24 D.H.

A continuation of Mechanical Engineering 65. For Mechanical Engineering Seniors. *1 Rec., 2 Lab. per week. 2d S.*

68. Advanced Design. Prof. Porter. 2–40 D.H.

Design of steam boiler plants and the lay-out of piping for the said plant. Selection of types of boilers and equipment for power plants. The lay-out and equipment for factories. For Mechanical Engineering Seniors.

Prerequisite—Mechanical Engineering 73. 3 Lab. per week. 2d S.

69. Mechanics of Engineering. Prof. Porter. 2–45 D.H.

Principles of mechanics as applied to design of beams, columns, plain and reinforced concrete construction, principles of dynamics as applied to the design of fly wheels and moving parts of machines. For Electrical Engineering and Mechanical Engineering Juniors.

Prerequisite—Mechanical Engineering 52. 5 Rec. per week. 1st S.

72. Manual Training. Prof. Porter. 2–45 D.H.

A study of the purpose of manual training work, of the proper methods of teaching, and of the equipment of manual training schools. For Mechanic Arts Seniors. *1 Rec., 2 Lab. per week. 2d S.*

73. Power Plant Engineering. Prof. Porter. 2–45 D.H.

A study of fuels, theory of combustion, various types of boiler engines and prime movers, full equipment of power plants, and the design of chimneys and cooling towers for Electrical Engineering and Mechanical Engineering Seniors.

Prerequisite—Mechanical Engineering 58. 4 Rec. per week. 1st S.

74. Kinematics of Machinery. Asst. Prof. McKone. 2–45 D.H.

Study of mechanisms, location of virtual centers, construction of velocity and acceleration diagrams, design of gears and linkages. For Electrical Engineering and Mechanical Engineering Sophomores.

Prerequisite—Drawing 57. *2 Lab. per week. 2d S.*

77. Valve Gears and Boiler Design. Asst. Prof. McKone. 2–40 D.H.

A study of various types of valves used in steam engines, the uses of Bilgram and Zeuner valve diagrams, the design of a Corliss valve gear, and the complete design of return tubular boilers. For Electrical Engineering and Mechanical Engineering Juniors.

Prerequisite—Mechanical Engineering 52. 2 Lab. per week. 1st S.

78. Industrial Engineering. Prof. Porter. 2–45 D.H.

A study of factory conditions, safety devices, sanitation, lighting, ventilation, fire prevention, methods of keeping costs and methods of supervision of factories. For Mechanical Engineering Seniors.

Prerequisite—Mechanical Engineering 73. 3 Rec. per week. 2d S.

79. Heating and Ventilation. Prof. Porter. 2–45 D.H.

Computation of air requirements, heat losses, design of heating and ventilation systems, location of apparatus, lay-out of piping, low pressure district heating systems. For Mechanical Engineering Seniors.

Prerequisite—Mechanical Engineering 64.

1 Rec., 2 Lab. per week. 1st S.

METEOROLOGY.

PROF. PETTEE.

1. Meteorology. Prof. Pettee. 206 T.H.

Recitations and lectures on wind systems, precipitation, humidity, laws of storms and tornadoes and methods of prediction of atmospheric changes. For Agricultural Seniors. Elective for Arts and Science students.

Prerequisite—A subject in physics. *2 Rec. per week. 1st S.*

*MILITARY SCIENCE AND TACTICS.

LIEUT. SUTHERLAND.

Unless excused by proper authority, all male students are required to complete three years' satisfactory work in drill and two years' satisfactory work in theoretical military science.

Military Drill.

Drill includes practical instruction in the following subjects: close and extended order drills by company and battalion, advance and rear guards, outposts, marches, ceremonies, battalion review, parades and guard mounting, guard duty, calisthenics and gymnastics, rifle practice, first aid to the injured. The two exercises per week in Drill are counted as one credit hour.

1. **Military Drill.** Lieut. Sutherland. Armory.
For Freshmen. *2 Drill exercises per week. 1st S.*

2. **Military Drill.** Lieut. Sutherland. Armory.
A continuation of Drill 1. For Freshmen.
2 Drill exercises per week. 2d S.

3. **Military Drill.** Lieut. Sutherland. Armory.
For Sophomores. *2 Drill exercises per week. 1st S.*

4. **Military Drill.** Lieut. Sutherland. Armory.
A continuation of Drill 3. For Sophomores.
2 Drill exercises per week. 2d S.

5. **Military Drill.** Lieut. Sutherland. Armory.
For Juniors. *2 Drill exercises per week. 1st S.*

6. **Military Drill.** Lieut. Sutherland. Armory.
A continuation of Drill 5. For Juniors.
2 Drill exercises per week. 2d S.

7. **Military Drill.** Lieut. Sutherland. Armory.
Elective for Seniors only. *2 Drill exercises per week. 1st S.*

8. **Military Drill.** Lieut. Sutherland. Armory.
A continuation of Drill 7. Elective for Seniors only.
2 Drill exercises per week. 2d S.

*Students who are excused from drill by competent authority are required to take additional work in some subject equivalent in hours to the military work from which they are excused.

Military Science.

LIEUT. SUTHERLAND.

Military Science includes theoretical instruction in the principles of the military profession and in the theory of the specific movements taught on the drill ground and in the field, the military policy and history of the United States, the principles of military discipline and the administrative duties of military officers.

1. Infantry Drill Regulations. Lieut. Sutherland. 105 Armory.

Practical instruction and lectures. For Freshmen.
1 Rec. per week. 1st S.

2. Manual of Guard Duty and Small Arms Firing Regulations.
Lieut. Sutherland. 105 Armory.

Practical instruction and lectures. For Freshmen.
Prerequisite—Military Science 1. *1 Rec. per week. 2d S.*

3. Field Service Regulations. Lieut. Sutherland. 105 Armory.

Lectures and discussions covering advance and rear guards, outposts, patrol, etc. For Sophomores.
Prerequisite—Military Science 2. *1 Rec. per week. 1st S.*

4. Field Service Regulations. Lieut. Sutherland. 105 Armory.

A continuation of Military Science 3. Practical field work. For Sophomores.
Prerequisite—Military Science 3. *1 Rec. per week. 2d S.*

5. Field Engineering and Hasty Intrenching.
Lieut. Sutherland. 105 Armory.

Lectures and practical work. Elective for Juniors.
Prerequisite—Military Science 4, and open only to students who are taking Drill. *1 Rec. per week. 1st S.*

6. Military Map Reading and Sketching.
Lieut. Sutherland. 105 Armory.

Theoretical and practical work. Elective for Juniors.
Prerequisite—Military Science 4, and open only to students who are taking Drill. *1 Rec. per week. 2d S.*

7. Army Regulations, Organization and Administration.
Lieut. Sutherland. 105 Armory.

Lectures and preparation of military papers. Elective for Seniors.
Prerequisite—Military Science 4, and open only to students who are taking Drill. *1 Rec. per week. 1st S.*

8. Army Regulations, Organization and Administration.
Lieut. Sutherland. 105 Armory

A continuation of Military Science 7. Elective for Seniors.

Prerequisite—Military Science 7, and open only to students who are taking Drill. *1 Rec. per week. 2d S.*

MINERALOGY.

PROF. JAMES.

54. Mineralogy. Prof. James. 4 C.H.

A short subject in blowpipe analysis, followed by laboratory practice in the determination and study of minerals, with special reference to their economic value. For Chemical Sophomores. Elective for Agricultural and Arts and Science Juniors.

Prerequisites—Chemistry 51 and 52. 2 Lab. per week. 2d S.

PHYSICAL CULTURE.

MISS ROLLINS.

Unless excused by proper authority, all women students are required to complete three years' work in physical culture.

1. Physical Culture. Miss Rollins. 303 T.H.

For Freshmen. Corrective gymnastics. *Two exercises per week. 1st S.*

2. Physical Culture. Miss Rollins. 303 T.H.

For Freshmen. Gymnasium practice and aesthetic games. Folk dancing. *Two exercises per week. 2d S.*

3. Physical Culture. Miss Rollins. 303 T.H.

For Sophomores. Practical gymnastics. *Two exercises per week. 1st S.*

4. Physical Culture. Miss Rollins. 303 T.H.

Continuation of Physical Culture 3, folk dancing and aesthetic games. *Two exercises per week. 2d S.*

5. Physical Culture. Miss Rollins. 303 T.H.

For Juniors. Advanced gymnastics, aesthetic, folk and interpretative dancing. *Two exercises per week. 1st S.*

6. Physical Culture. Miss Rollins. 303 T.H.

For Juniors. Continuation of Physical Culture 5. *Two exercises per week. 2d S.*

7. Physical Culture. Miss Rollins. 303 T.H.

For Seniors. Classic dancing and continuation of Junior work.

Two exercises per week. 1st S.

8. Physical Culture. Miss Rollins. 303 T.H.

For Seniors. Continuation of Physical Culture 7.

Two exercises per week. 2d S.

PHYSICS.

PROF. FISHER, MR. MORAN.

51. Mechanics and Heat. Prof. Fisher. 2–46 D.H.

Lectures, illustrated by experiments, with notebooks to be handed in at intervals and occasional written quizzes. As little mathematics is used as is consistent with the proper interpretation of the lecture experiments. For Agricultural and Mechanic Arts Sophomores. Elective for Arts and Science students.

Two Lec. per week. 1st S.

52. Magnetism and Electricity. Prof. Fisher. 2–46 D.H.

A continuation of Physics 51. *Two Lec. per week. 2d S.*

53. Physical Theory and Practice. Mr. Moran. 1–35, 1–37 D.H.

Recitations on a standard textbook, with laboratory work, supplemented by occasional lectures.

Students electing this are advised to take analytics and calculus; the lack of them will prove a hindrance. For Mechanical and Electrical Sophomores; elective for Arts and Science students.

4 Rec., 2 Lab. per week. 1st S.

54. Physical Theory and Practice. Mr. Moran. 1–35, 1–37 D.H.

A continuation of Physics 53.

Prerequisite—Physics 53. *4 Rec., 2 Lab. per week. 2d S.*

55. Mathematical Physics and Practice. Prof. Fisher. 1–35, 1–37 D.H.

Similar to Physics 53, but more mathematical. For Chemical Juniors. Elective for Arts and Science students.

Prerequisite—Mathematics 52, 55 and 56.

4 Rec., 2 Lab. per week. 1st S.

56. Mathematical Physics and Practice. Prof. Fisher. 1–35, 1–37 D.H.

A continuation of Physics 55.

Prerequisite—Physics 55. *4 Rec., 2 Lab. per week. 2d S.*

57. Household Physics. Prof. Fisher. 1–35, 1–37 D.H.

An elementary treatment, with illustrations drawn largely from the modern house; to begin in the fall of 1916–1917. For Home Economics Sophomores entering without high school physics.

1 Rec., 1 Lab. per week. 1st S.

58. Elementary Physics and Practice. Mr. Moran. 1–35, 1–37 D.H.

A review of physics of elementary grade, for students who do not desire mathematical work, but need a study of principles, with laboratory applications. Mathematics 51 and Physics 51 and 52 must precede or accompany this. For Mechanic Arts Sophomores. Elective for Arts and Science students. *2 Rec., 1 Lab. per week. 2d S.*

59. Elementary Optics and Photograhic Instruments.

Mr. Moran. 2–46 D.H.

Designed for students who wish to use optical and photographic apparatus intelligently. Lectures on fundamental principles of light, images, color and photometry, and on practical visual, projection and photographic lenses and other apparatus; with experimental illustrations. (Not devoted to photographic chemistry, developers, etc.) Stencil notes will be used. Elective for all students, except Freshmen and Two Year students in the first year.

2 Lec. per week. 1st S.

61. Elementary Laboratory Optics. Mr. Moran. 1–35 D.H.

Physical laboratory work designed to accompany Physics 59, which must precede or accompany this. Individual experiments, on which reports will be handed in. *2 Lab. per week. 1st S.*

NOTE.—The following fees or deposits are required at the beginning of a year or part of a year: for notes, not returnable, Physics 51, 52–75c., Physics 59–40c.; for notes and damage, balance returnable at end of year, Physics 31, 57, 58, 61, 82,—$1.00; Physics 53, 54, 55, 56—$2.00.

NOTE.—Students desiring to be recommended as High School Physics teachers must pass with grade of 80 in Physics 51, 52, 55, 56, or with grade of 85 in Physics 51, 52, 53, 54.

POLITICAL SCIENCE.

PROF. SCOTT.

2. Laws of Business. Prof. Scott. 202 Lib.

Recitations supplemented by the discussion of cases. Elective for Arts and Science and Mechanic Arts Juniors and Seniors and Agricultural Seniors. *3 Rec. per week. 2d S.*

3. American Constitutional Law. Prof. Scott. 202 Lib.

Recitations, supplemented by a study of the decisions of the United States Supreme Court. Special attention is given to the connection between American constitutions and American political history. Elective for Arts and Science and Mechanic Arts Juniors and Seniors and Agricultural Seniors. *3 Rec. per week. 1st S.*

PSYCHOLOGY.

PROF. SIMMERS.

52. Introduction to Psychology. Prof. Simmers. 102 T.H.

A rapid survey of the physiological bases of behavior, is followed by a more detailed study of the fundamental facts of mind or human behavior, chiefly as exhibited by the normal individual working under normal conditions. The principles of the science are related as closely as possible to the concrete experiences of the student.

Required of Manual Arts Sophomores and Agricultural Juniors. Elective for all other students. Must be taken by those who wish to elect other subjects in psychology. Lectures, assigned readings and discussion. Sophomore subject. *3 Rec. per week. 2d S.*

53. Psychology of the Adolescent. Prof. Simmers. 102 T.H.

A study is made of the growth and development of the physical, psychic, intellectual, moral, social and religious nature of the adolescent boy and girl. The aim is to develop in the students a clearer insight into the nature of youth, particularly those of high school age, so they can be dealt with in a more sympathetic and helpful manner. Required of Manual Arts and Agricultural Seniors. Elective for all other students. Lectures, assigned readings and discussion. Junior subject.

Prerequisite—Psychology 52. *3 Rec. per week. 1st S.*

SHOP WORK.

PROF. PORTER, MR. CAHILL AND MR. BATCHELDER.

51. Wood Work. Mr. Batchelder. Second Floor of Shop.

Instruction in the use and care of wood working tools, and machinery in the wood shop, exercises in making joints of various types, and pattern making for Engineering Mechanic Arts Freshmen. Elective for Arts and Science Freshmen. *2 Lab. per week. 1st S.*

51a. Wood Work. Mr. Batchelder. Second Floor of Shop.

Instruction in the care and use of wood working tools and machinery; making of simple joints and bench exercises. For Chemical Freshmen. *1 Lab. per week. 1st S.*

52. Wood Work. Mr. Batchelder. Second Floor of Shop.

Continuation of Shop 51. Is arranged to teach students taking Mechanic Arts Course, cabinet making, and its application to manual training. For Mechanic Arts Freshmen.

Prerequisite—Shop 51. *2 Lab. per week. 2d S.*

53. Wood Work. Mr. Batchelder. Second Floor of Shop.

Instruction in the care and use of tools in the carpenter shop, making of simple joints and frames, saw filing and the making of handles, single trees and other implements of wood used upon the farm. For Agricultural Sophomores. *2 Lab. per week. 1st S.*

55. Forging. Mr. Cahill. First Floor of Shop.

This is a study of the forging of iron and steel and is designed to teach the operations of drawing, upsetting, welding, twisting, splitting and punching. A study is made of the construction, care and management of the forge and instruction given in tempering, case hardening and annealing. For Agricultural Sophomores. *1 Lab. per week. 1st S.*

57. Forging. Mr. Cahill. First Floor of Shop.

This is a study of the forging of iron and steel and is designed to teach the operation of drawing, upsetting, welding, twisting, splitting, and punching. A study is made of the construction, care and management of the forge and instruction given in tempering, case hardening and annealing. For Electrical and Mechanical Sophomores.

2 Lab. per week. 1st S.

59. Wood Work. Mr. Batchelder. Second Floor of Shop.

The use and care of wood turning tools and machinery, exercises upon wood turning lathes and cabinet making. For Mechanic Arts Sophomores.

Prerequisite—Shop 52. *2 Lab. per week. 1st S.*

60. Wood Work. Mr. Batchelder. Second Floor of Shop.

Continuation of Shop 59. More complicated cabinet work and finishing same. For Mechanic Arts Sophomores.

3 Lab. per week. 2d S.

62. Machine Work. Mr. Cahill. First Floor of Shop.

Exercises in bench work, chipping, filing and scraping and laying out of work from drawings; a study of cutting edges and tool adjustments best suited for different metals together with a study of cutting speeds and feeds. Practice in operating the principal machine tools, such as the shaper, lathe, drill press, planer and milling machine. For Electrical and Mechanical Sophomores. *2 Lab. per week. 2d S.*

63. General Machine Work. Mr. Cahill. First Floor of Shop.

A continuation of Shop 62. For Electrical and Mechanical Juniors.
2 Lab. per week. 1st S.

64. Manufacturing. Mr. Cahill. First Floor of Shop.

Construction and use of jigs and special fixtures; use of limit gauges, special tools, turret and screw machinery; manufacture of some simple machine, using special appliances. For Electrical Juniors. Elective for Mechanical Juniors. *2 Lab. per week. 2d S.*

65. Wood Work. Mr. Batchelder. Second Floor of Shop.

This subject is laid out to teach students exercises that are suitable for subjects in manual training in secondary schools. Mechanic Arts Juniors. *3 Lab. per week. 1st S.*

66. Forge Work. Mr. Cahill. First Floor of Shop.

This is a study of the forging of iron and steel and is designed to teach the operation of drawing, upsetting, welding, twisting, splitting, and punching. A study is made of the construction, care and management of the forge and instruction given in tempering, case hardening and annealing. For Mechanic Arts Juniors.
3 Lab. per week. 2d S.

68. Machine Work. Mr. Cahill. First Floor of Shop.

Exercises in bench work, chipping, filing and scraping and laying out of work from drawings; a study of cutting edges and tool adjustments best suited for different metals together with a study of cutting speeds and feeds. Practice in operating the principal machine tools, such as the shaper, lathe, drill press, planer and milling machine. For Chemical Juniors. *2 Lab. per week. 2d S.*

69. Advanced Shop Work. Mr. Batchelder. Second Floor of Shop.

Advanced pattern making and foundry practice for Mechanical Seniors. *2 Lab. per week. 1st S.*

70. Advanced Shop Work. Mr. Cahill. First Floor of Shop.

Tool making. For Mechanical Seniors. *2 Lab. per week. 2d S.*

71. Machine Work. Mr. Cahill. First Floor of Shop.

Machine work arranged to meet the needs of students taking the Mechanic Arts Course for Teachers. For Mechanic Arts Seniors.
2 Lab. per week. 1st S.

72. Machine Work. Mr. Cahill. First Floor of Shop.

A continuation of Shop 71. *3 Lab. per week. 2d S.*

SOCIOLOGY.

PROF. GROVES.

51. Primitive Man and Social Origins. Prof. Groves. 201 Lib.

An elementary study of life of primitive man, the beginnings of human society and the factors that condition social evolution. The subject aims to introduce the student to a field of investigation of special value to the student of the social sciences. Special attention is given to the study of primitive social control. Ethnological readings are required.

The subject includes a discussion of the following topics: Geographical basis of human society, origin and antiquity of primitive man, races, race crossing, prehistoric culture periods, primitive life conditions including food, housing, inventions, slavery, art, dress, marriage, family forms and customs, totemism, tabu, magic, medicine men, ceremonies, secret societies, clan and tribal organization.

Special attention will be given to the theories of human association. Sophomore subject. Lectures and recitations. *3 Rec. per week. 1st S.*

52. Social Pathology and Modern Philanthropy.
Prof. Groves. 201 Lib.

This subject in modern social problems covers the following ground:

A. Study of the nature, origin and proper treatment of dependent, defective and delinquent classes, including an introduction to the theories of criminal anthropology.

B. Study of contemporary social problems and movements for social betterment as reported in *The Survey.*

C. Thesis work on the part of the student based upon first-hand study of some concrete social problem.

Junior subject. Students are advised to complete Sociology 51 before electing this subject. Lectures and recitations.

3 Rec. per week. 2d S.

***53. Mental Defectives.** Prof. Groves. 201 Lib.

A sociological study of mental defectiveness with special attention to the problem of social prophylaxis. Designed for students who plan to engage in social or educational work of an administrative or institutional character or who plan to do graduate work in the field of psychology or sociology.

The subject covers the following ground:

A. The study of amentia, including a discussion of the number, causation, pathology, classification, characteristics, problem of diagnosis and prognosis and the treatment of aments.

B. The study of the constitution and function of the psychological clinic, method of classifying clinic cases, the Binet measuring scale, the sociological relations of the clinic.

C. Individual study by the student of typical cases of mental defectiveness by the case method.

D. An introduction to the literature of amentia.

Junior subject. Lectures and recitations.

Prerequisites—Psychology 52 and Sociology 51.

3 Rec. per week. 1st S.

54. Rural and Community Sociology. Prof. Groves. 201 Lib.

A study of the social significance, conditions and resources of American country life with the purpose of developing community leadership. The subject includes a discussion of the following:

A. Rural ethnology and sociology. Land basis of society, origin of primitive agriculture, animal and plant life as factors in human progress, modern agriculture and population, migration, immigration and city drift.

B. Rural social psychology. Imitation and city influence, suggestibility, conflict, discussion, public opinion and community pride.

C. Rural social pathology. Dependents, defectives and delinquents in their relation to the country community, problem of rural police protection, moral problems of the rural community.

D. Rural progress. Survey making, communication, community advertising, associations and clubs, rural education, wider use of rural school houses, rural school gardens, community competition, fairs, recreation, the rural church and welfare work.

Senior subject. Lectures and recitations. *3 Rec. per week. 2d S.*

***55. Social Psychology.** Prof. Groves. 201 Lib.

A study of the development and the characteristics of the social mind of man.

The subject covers the following ground:

A. The study in detail of the character and operation of the instincts, sentiments and emotions of man of primary importance for his life in society.

B. The study of the operation of the modern social mind, including a discussion of suggestibility, the crowd, mob mind, fashion, conventionality, custom-imitation, social conflict, discussion, public opinion and problems of social control.

Junior subject. Lectures and recitations.

Prerequisite—Psychology 52. *3 Rec. per week. 1st S.*

†56. An Introduction to General Sociology. Prof. Groves. 201 Lib.

An advanced subject in the principles of sociology which aims to introduce the student to a systematic sociological interpretation of

* Sociology 53 and 55 are given in alternate years. Sociology 53 is offered in 1916–1917.

† Sociology 56 and 58 are given in alternate years. Sociology 56 is offered in 1916–1917.

human association. It includes a study of the history of sociological thought, discussions of sociological principles and recent sociological literature. This subject is the most advanced offered by the department and is especially provided for those who are specializing in the social sciences. Thesis work is required.

Senior subject. Lectures and recitations.

Prerequisite—Any two subjects in sociology. 3 Rec. per week. 2d S.

***58. Social Ethics.** Prof. Groves. 201 Lib.

This subject in social ethics covers the following ground:

A. Origin and development of moral conceptions in savage society.

B. The study of representative altruistic thought of ethical significance.

C. The investigation by the seminar method of some ethical problem of importance in modern social life. The topic for 1915–1916 will be race prejudice and race friction.

Senior subject. Lectures and recitations.

Prerequisite—Any two subjects in sociology. 3 Rec. per week. 2d S.

SPANISH.

ASST. PROF. WHITMAN.

1. Elementary Spanish. Asst, Prof. Whitman. 102 T.H.

Elements of Spanish grammar. Reading of simple stories; conversation and dictation. Elective for Arts and Science students.

3 Rec. per week. 1st S.

2. A Continuation of Spanish 1. Asst. Prof. Whitman. 102 T.H.

Prerequisite—Spanish 1. 3 Rec. per week. 2d S.

3. Spanish Prose. Asst. Prof. Whitman. 102 T.H.

Reading and translation, conversation, composition.

Prerequisite—Spanish 2. 3 Rec. per week. 1st S.

4. A Continuation of Spanish 3. Asst. Prof. Whitman. 102 T.H.

Prerequisite—Spanish 3. 3 Rec. per week. 2d S.

ZOÖLOGY.

PROF. JACKSON, MR. BATCHELDER, MR. BEAN.

The subjects in zoölogy are arranged in sequence as follows: Arts and Science students desiring a general scientific knowledge of the subject should elect from group A, B and D with optional elections in C. Stu-

* Sociology 56 and 58 are given in alternating years. Sociology 56 is offered in 1916–1917.

dents who do not intend to specialize in zoölogy may elect from group A or B. Those students intending to teach the subject of zoölogy or who are contemplating entering the medical profession should consult the head of the department as to the sequence of subjects. However any subject offered may be taken by students who have completed the required prerequisites.

Group A. Systematic Zoölogy.

51. General Zoölogy.

Prof. Jackson, Mr. Batchelder, Mr. Bean. 212 T.H.

A detailed study of the fundamental principles of life; the nature and physiology of protoplasm; the structure of the cell and the processes of cell division. The structure and physiology of the tissues will be discussed and their occurrence in the different phyla of the animal kingdom. There will then follow a discussion of the different organs and systems of the body, their function and modification in the different types of animals. For Agricultural and Home Economics Freshmen. Elective for Arts and Science and Mechanic Arts Freshmen.

2 Lec., 1 Lab. per week. 1st S.

52. General Zoölogy. Prof. Jackson, Mr. Batchelder. 212 T.H.

The structure, habits, physiology and life history of the different types of animals will be discussed. The economic aspect will be emphasized so far as possible and their importance and relation to man. The laboratory work will consist of the study and dissection of type forms. For Agricultural and Home Economics Freshmen. Elective for Arts and Science and Mechanic Arts students.

Prerequisite—Zoölogy 51. *2 Lec., 1 Lab. per week. 2d S.*

53. Faunal Zoölogy (Invertebrate). Prof. Jackson. 212 T.H.

A study of the habits, life history and identification of local invertebrate animals exclusive of the insects. The study is entirely systematic and is primarily for students intending to teach zoölogy.

Prerequisites—Zoölogy 51 and 52. 1 Report, 2 Lab. per week. 1st S.

54. Faunal Zoölogy (Vertebrate). Prof. Jackson. 212 T.H.

A study of the habits, life history and identification of local vertebrate animals exclusive of the birds. The student will be expected to become familiar with the majority of our local vertebrate animals. The work is primarily for students intending to teach zoölogy.

Prerequisites—Zoölogy 51 and 52. 1 Report, 2 Lab. per week. 2d S.

55. Systematic Entomology. Prof. Jackson, Mr. Batchelder. 212 T.H.

A laboratory subject consisting of the collection and identification of insects without regard to their economic importance. This is primarily for students of entomology. It is suggested that students electing this subject collect insects during the summer.

Prerequisites—Zoölogy 51 and 52. 1 Report, 2 Lab. per week. 1st S.

56. Ornithology. Prof. Jackson. 212 T.H.

A study of the classification, identification and economic importance of the birds. The object of the subject is to enable students to identify birds at sight and to become familiar with their economic importance.

Prerequisites—Zoölogy 51 and 52. 1 Lec., 2 field trips per week. 2d S.

Group B. Physiology, Hygiene and Sanitation.

58. Human Anatomy and Physiology.
Prof. Jackson, Mr. Bean. 212 T.H.

A detailed study of the structure, physiology and histology of the human body. The various physiological processes of the body will be discussed, particularly in regard to their bearing on general hygiene and sanitation. For Home Economics Freshmen, elective for Arts and Science Freshmen and Sophomores. Written reports and library assignments required.

Prerequisite—Zoölogy 51. 2 Lec., 1 Lab. per week. 2d S.

59. Hygiene and Sanitation. Prof. Jackson, Mr. Bean. 212 T.H.

A study of the fundamental principles of hygiene and sanitation. The nature of disease and method of maintaining the coördination of the body will be discussed, and practical methods of improving the efficiency of a human machine. For Home Economics students. Elective for Agricultural and Arts and Science Sophomores, Juniors and Seniors.

Prerequisite—Zoölogy 51. 2 Lec., 1 Lab. per week. 1st S.

60. Advanced Sanitation.
Prof. Jackson, Mr. Bean, Mr. Batchelder. 212 T.H.

A continuation of Zoölogy 59, dealing with various phases of industrial and home sanitation. The nature of wound infection, antiseptics and disinfectants, the ventilation of buildings, shops, etc., water supplies and other topics of a practical nature, will be discussed. Frequent written reports.

Prerequisites—Zoölogy 51 and 59. 2 Lec., 1 Lab. per week. 2d S.

61. Embryology. Prof. Jackson. 201 T.H.

A detailed study of vertebrate embryo, its method of development and the relation of the embryo to the parent. The laboratory work will be primarily with the frog and chick embryo. The lectures will include human embryology. Zoölogy 67, Histology, may be taken parallel with Embryology.

Prerequisites—Zoölogy 51, 52, 57 and 67.

1 Lec., 2 Lab. per week. 1st S.

62. Advanced Neurology. Prof. Jackson, Mr. Bean. 201 T.H.

A study of the structure and physiology of the human nervous system. The laboratory work will consist of a study of the different types of neurons, the nature of nervous impulses and a detailed study of the nerve tract in the brain and spinal column. The subject is primarily adapted for students of psychology.

Prerequisites—Zoölogy 51 and 57. 1 Lec., 2 Lab. per week. 2d S.

Group C. Philosophical Zoölogy.

64. Evolution and Genetics. Prof. Jackson. 212 T.H.

Lectures dealing with the various problems of evolution heredity and eugenics. A detailed study of the mechanical basis of heredity and variation with the various theories of evolution, the factors of evolution, inheritance of human characteristics, heredity and disease and other practical problems will be discussed. For Home Economics Juniors. Elective for Agricultural and Arts and Science Juniors and Seniors. Written reports and reviews required.

Prerequisite—Zoölogy 51. 3 Lec. per week. 2d S.

Group D. Anatomical Zoölogy.

65. Comparative Anatomy of the Invertebrates.

Mr. Batchelder. 203 T.H.

A detailed study of the structure of different types of invertebrate animals exclusive of insects. The subject is primarily for students intending to teach zoölogy.

Prerequisites—Zoölogy 51 and 52. 1 Report, 2 Lab. per week. 1st S.

66. Comparative Anatomy of the Vertebrates.

Mr. Batchelder. 203 T.H.

A detailed study of the structure of different types of vertebrate animals. Primarily for students intending to teach zöology.

Prerequisites—Zoölogy 51 and 52. 1 Report, 2 Lab. per week. 1st S.

67. Histology. Prof. Jackson. 203 T.H.

A detailed study of the structure of the tissues of vertebrate animals, cell specialization and the manner in which tissues are combined into organs. The subject is primarily for students intending to teach zoölogy and a great deal of attention will be paid to the technique of histology.

Prerequisites—Zoölogy 51, 52 and 57.

1 Report, 2 Lab. per week. 1st S.

68. Insect Anatomy. Mr. Batchelder. 203 T.H.

A study of the anatomy of different types of insects. Especially adapted for students in entomology.

Prerequisites—Zoölogy 51, 52 and 55. 1 Report, 2 Lab. per week. 2d S.

Group E. Advanced Zoölogy.

69. Advanced Zoölogy. Prof. Jackson. 202 T.H.

Arranged to suit the need of those who wish to specialize in zoölogy. This subject may not be elected except by students who have completed at least 18 hours in zoölogy or entomology with an average mark of at least 80 and then only on the presentation of the detailed outline of the problems they wish to study. The subject is primarily for graduate students. Open only to students by special permission.

Credit and hours to be arranged. 1st S.

70. Advanced Zoölogy. Prof. Jackson. 202 T.H.

A continuation of Zoölogy 69. The subject can only be elected under the above restrictions. Open only to students by special permission.

Credit and hours to be arranged. 2d S.

71. Vocational Zoölogy. Prof. Jackson. 202 T.H.

A discussion of the principles of teaching zoölogy and the application of zoölogy to other lines of work. Practical work will be under the direct supervision of the head of the department. Lectures will deal with the method of presenting the subject with the adaptation of the subject to meet the special requirements of high schools and colleges; methods of grading laboratory work and examination papers and general laboratory and class administration. The application of zoölogy to various government positions will also be discussed. Only students who have shown special proficiency in zoölogy may elect this subject. Open only to students by special permission.

1 Report, 2 Lab. per week. 1st S.

72. Vocational Zoölogy. Prof. Jackson. 202 T.H.

A continuation of Zoölogy 71. The subject can only be elected under the above restrictions. Open only to students by special permission.

1 Report, 2 Lab. per week. 2d S.

THE TWO-YEAR COURSE IN AGRICULTURE.

This course was established by the state legislature in 1895, and provides an opportunity to secure a training for their life work for those students who do not have the time, money or preparation to take a four-year college course.

The course is especially arranged, and suited for the young, bright boys of the farm, who expect to make a business of some line of agricultural or horticultural work. Although it is open to students who have had no previous training on the farm, the entrance of such is not encouraged because of their lack of practical experience. By independent work and close application, however, inexperienced students sometimes pass the course with credit.

The year's work closes the middle of May, so as to enable the students to get home for the spring work on the farm or to accept other positions for the summer. This short school year also permits four months' time for those students who are dependent upon their own resources to earn money for the following year.

The courses of study and the classes of the two-year course are separate and distinct from those of the four-year courses. The work of the first year is largely preparatory, being a study of the sciences underlying agriculture, together with some elementary agricultural and horticultural work. The second year contains optional studies so that it is possible for students to specialize in animal husbandry, poultry, dairying, horticulture or forestry. Ten hours per week on the average are spent in practical work on the farm, in the barn, greenhouses, shops or forest.

Admission.—The course is open to those having a fair knowledge of reading, spelling, writing, arithmetic, English

grammar, geography and history of the United States. Applicants under eighteen years of age, who do not present high school or other satisfactory certificates to show their proficiency in these subjects, may be given entrance examinations on Tuesday afternoon and Wednesday morning of the opening week of college. Applicants who are over eighteen years of age will be admitted without examination.

Expenses.—The expenses of the course will vary with the taste and frugality of the students and the kind of accommodations which they secure. The total average expense for the year, if the student holds a scholarship, is not far from $275. Many students by working for their board or room rent, or by doing various kinds of work about the college or village, are able to go through the year with a cash outlay not exceeding $150. However, as a rule, such students are either men of exceptional physical alertness, or those who are quick to seize opportunity.

Opening.—The course for the year will open Wednesday, September 13, 1916, and close Wednesday, May 16, 1917. A Christmas vacation of two weeks, and a spring vacation will be given.

Graduation.—No degree is given at the end of the course, but a certificate of graduation is issued upon its completion or the completion of its equivalent.

Students graduating from the two-year course must present to the dean of the agricultural division on or before the second Tuesday preceding their graduation satisfactory evidence of having had practical experience in farm work, either through having lived on a farm for at least two years subsequent to the age of 12 or through having worked on a farm for at least four months subsequent to the age of 15.

Students graduating from this course in 1917 must have at least 74 credit hours.

TWO-YEAR COURSE OF STUDY.

(For details, see description of studies, which follow.)

First Year.

FIRST SEMESTER.

		Credit Hours
Botany 31	Elements of Botany	3
Dairying 31	Milk and Milk Testing	3
Drill 31	Military Drill	1
English 31	Grammar and Elementary Composition	3
Horticulture 33	Fruit Growing	3
Mathematics 31	Practical Arithmetic	2
Military Science 31	Infantry Drill Regulations	1
Zoölogy 31	Human Physiology and Hygiene	3

SECOND SEMESTER.

Animal Husbandry 32	Breeds of Live Stock	4
Botany 32	Fungous Diseases of Plants	2
Chemistry 32	Elementary Applications	2
Drill 32	Military Drill	1
English 32	Grammar and Composition	3
Entomology 32	Economic Entomology	3
Forestry 32	Farm Forestry	2
Military Science 32	Manual of Guard Duty	1
Shop Work 32	Wood Work	1

Second Year.

FIRST SEMESTER.

Agronomy 31	Farm Engineering and Soils	3
**Animal Husbandry 35*	Veterinary Anatomy	3
**Animal Husbandry 39*	Poultry	3
**Dairying 33*	Butter Making	3
**Dairying 35*	Dairy Bacteriology	3
Drawing 31	Agricultural Drawing	1
Drill 33	Military Drill	1
**Forestry 53*	Dendrology	4
**Horticulture 31*	Vegetable Gardening	3
**Horticulture 35*	Greenhouse Management	3
Military Science 33	Field Service Regulations	1
Physics 31	Elementary Physics	3
Sociology 31	Elementary Social Science	3

* Elective. Elect courses to make a total of at least 18 hours.

SECOND SEMESTER.

		Credit Hours
Agronomy 32	Field Crops	3
**Agronomy 34*	Manures and Fertilizers	2
**Agronomy 36*	Farm Management and Accounting	3
Animal Husbandry 34	Feeds and Feeding	3
**Animal Husbandry 36*	Animal Diseases	3
**Animal Husbandry 38*	Animal Breeding	2
**Animal Husbandry 40*	Poultry	3
**Dairying 32*	Market Milk	3
**Dairying 34*	Cheese Making	3
Drill 34	Military Drill	1
Economics 32	Elementary Economics	3
**Forestry 54*	Forest Mensuration	3
**Horticulture 32*	Home Decoration	3
**Horticulture 34*	Orchard Problems	2
Military Science 34	Field Service Regulations	1
Shop Work 34	Iron Work	1

DESCRIPTION OF STUDIES.

AGRONOMY.

PROF. TAYLOR, ASST. PROF. PRINCE, MR. YOUNG,

31. Farm Engineering and Soils. Asst. Prof. Prince. 110 M.H.

This subject will include the mapping of farms, leveling for drains, a study of farm implements and of farm buildings; textbooks and recitations upon the formation, kinds and physical properties of soils. Practical exercises are given in map making, laying out drains, comparing farm machines, rope splicing and in physical experiments with soils.

For Two-Year Students, Second Year.

2 Rec., 1 Lab. per week. 1st S.

32. Field Crops. Asst. Prof. Prince. 110 M.H.

Lectures and recitations on the culture, uses and value of the field crops grown in New England. Laboratory practice will include seed testing, seed identification, corn and potato judging, hay judging and a study of the different legumes, grasses and grains.

2 Lec., 1 Lab. per week. 2d S.

34. Manures and Fertilizers. Prof. Taylor. 110 M.H.

Textbook and recitations upon the constituents of farm manures and chemical fertilizers, the care and application of manures, the home-

* Elective. Elect courses to make a total of at least 18 hours.

mixing of fertilizers and the modifications required by different soils and crops. Elective for Two-Year Students, Second Year.

2 Lec. per week. 2d S.

36. Farm Management and Accounting. Mr. Young. 110 M.H.

Textbook, lectures, and recitations upon different types of farming, size of farms, cropping systems, live stock problems, marketing farm products, choice of a farm, and farm records and accounts. Practical work in laying out farms; keeping complete cost accounts on farms; analyzing and organizing the farm business. Elective for Two-Year Students, Second Year. *2 Lec., 1 Lab. per week. 2d S.*

ANIMAL HUSBANDRY.

PROF. ECKMAN, ASST. PROF. MITCHELL, MR. FAWCETT.

32. Types and Breeds of Live Stock. Mr. Fawcett. 301 M.H.

Similar to Animal Husbandry 51. For Two-Year Students, First Year. *3 Lec., 1 Lab. per week. 2d S.*

34. Feeds and Feeding. Prof. Eckman. 105 M.H.

Similar to Animal Husbandry 54. For Two-Year Students, Second Year. *2 Rec., 1 Lab. per week. 2d S.*

35. Veterinary Anatomy. Mr. Fawcett. 105 M.H.

Similar to Animal Husbandry 55. Elective for Two-Year Students. *3 Rec. per week. 1st S.*

36. Animal Diseases. Prof. Eckman. 105 M.H.

Similar to Animal Husbandry 56. Elective for Two-Year Students. *Prerequisite—Animal Husbandry 35.* *3 Rec. per week. 2d S.*

38. Animal Breeding. Mr. Fawcett. 2 M.H.

A study of the principles and practices of animal breeding. Practice is given in tracing pedigrees. Elective for Two-Year Students, Second Year. *2 Rec. per week. 2d S.*

39. Poultry. Asst. Prof. Mitchell. 209 M.H.

Covers the subjects of poultry house construction, types and breeds of poultry, feeding, killing and dressing, caponizing, and equipment. Elective for Two-Year Students. *2 Rec., 1 Lab. per week. 1st. S.*

40. Poultry. Asst. Prof. Mitchell. 209 M.H.

Covers the subjects of incubation, brooding, care of young stock, market poultry, poultry diseases, and poultry farm problems. Elective for Two-Year Students. *2 Rec., 1 Lab. per week. 2d S.*

BOTANY.

PROF. BUTLER, DR. OTIS.

31. Elements of Botany. Dr. Otis. 206 N.H.

Devoted to the study of how plants grow and how plants feed. For Two-Year Students, First Year. *1 Lec., 2 Lab. per week. 1st S.*

32. Fungous Diseases of Plants. Prof. Butler, Dr. Otis. 206 N.H.

The principal fungous diseases, their cure and prevention. For Two-Year Students, First Year. *1 Lec., 1 Lab. per week. 2d S.*

CHEMISTRY.

MR. GRANT.

32. Elementary Applications. Mr. Grant. 204 C.H.

An elementary study, with special reference to the elements of plant food, composition of fertilizers, elements subject to exhaustion in soils, etc. For Two-Year Students, First Year. *2 Rec. per week. 2d S.*

DAIRYING.

PROF. RASMUSSEN, MR. WILSON, MR. AMBROSE.

31. Milk—Milk Testing. Mr. Wilson, Mr. Ambrose. 204 M.H.

Lectures and recitations on the composition and properties of milk, the Babcock test, the lactometer, and the inspection of milk; value and methods of keeping records of dairy cows, coöperation in dairying. For Two-Year Students, First Year. *2 Lec., 1 Lab. per week. 1st S.*

32. Market Milk. Mr. Wilson. Dairy Bldg.

A study of the value of milk as a food, the production and handling of market milk and of certified milk. Commercial milk inspection. Exercises will be given in the judging of milk and cream and in the scoring of dairies. Elective for Two-Year Students, Second Year.

2 Lec., 1 Lab. per week. 2d S.

33. Butter Making. Prof. Rasmussen. Dairy Bldg.

Comparative study of different systems of creaming and factors influencing the efficiency of the hand separator. A study of commercial starters, cream ripening, churning, marketing, and scoring of butter. Elective for Two-Year Students, Second Year.

2 Lec., 1 Lab. per week. 1st. S.

34. Cheese Making. Mr. Wilson. Dairy Bldg.

Lectures and laboratory work covering the details of manufacture, curing and marketing of the more important kinds of cheese. Elective for Two-Year Students, Second Year. *2 Lec., 1 Lab. per week. 2d S.*

35. Dairy Bacteriology. Mr. Wilson. Dairy Bldg.

Methods of bacteriological analysis of milk and its products; relation of bacteria to milk and its products; and application of bacteriological principles to the dairy industry. Open to a limited number of students. Elective for Two-Year Students, Second Year.

1 Lec., 2 Lab. per week. 1st S.

DRAWING.

PROF. HUDDLESTON, MR. LATON.

31. Agricultural Drawing. Prof. Huddleston. 3–52 D.H.

A brief study in the use of drafting instruments, followed by the drawing in plan of a model farm-stead with special study given to the arrangement of buildings individually and collectively. For Two-Year Students, Second Year. *1 drawing period per week. 1st S.*

ECONOMICS.

PROF. SMITH.

32. Elementary Social Science. Prof. Smith. 201 Lib.

This will be a brief survey of the facts and principles of business activity. Since our great economic problems are largely problems of value, some time will be spent in considering the principles which determine the values of commodities, of land, of labor, and of capital. Money and banking institutions, markets and marketing problems will also be discussed. For Two-Year Students, Second Year.

3 Rec. per week. 2d S.

ENGLISH.

PROF. RICHARDS, MR. ———.

31. Grammar and Elementary Composition. Mr. ———. 205 T.H.

For Two-Year Students, First Year. *3 Rec. per week. 1st S.*

32. Grammar and Composition. Mr. ———. 205 T.H.

For Two-Year Students, First Year.
Prerequisite—English 31. *3 Rec. per week. 2d S.*

ENTOMOLOGY.

PROF. O'KANE, MR. CLEVELAND.

32. Principles of Economic Entomology.
Prof. O'Kane, Mr. Cleveland. 213 T.H.

The relation of the structure and classification of insects to methods of insect control. The preparation and application of insecticides. Spray machinery and appliances. For Two-Year Students, First Year.
3 Rec. per week. 2d S.

FORESTRY.

PROF. WOODWARD, MR. GAMASH.

32. Farm Forestry. Prof. Woodward, Mr. Gamash. 301 M.H.

A study of the general principles of forestry with particular reference to the care and management of woodlots; the various methods of cutting and marketing; log scaling; estimating standing timber; protection of forests; seeding and planting; reproducing forests. For Two-Year Students, First Year. *1 Rec., 1 Lab. per week. 2d S.*

HORTICULTURE.

PROF. GOURLEY, ASST. PROF. WOLFF, MR. SCHERRER.

31. Vegetable Gardening. Mr. Scherrer. 202 M.H.

A study of the commercial methods of vegetable growing. Special attention is given to the home garden. Elective for Two-Year Students, Second Year. *1 Lec., 1 Rec., 1 Lab. per week. 1st S.*

32. Home Decoration. Mr. Scherrer. 202 M.H.

A study of ornamental trees, shrubs and flowers; their culture, proper arrangement and decorative value, with special reference to the home surroundings. Elective for Two-Year Students, Second Year.
1 Lec., 1 Rec., 1 Lab. per week. 2d S.

33. Fruit Growing. Asst. Prof. Wolff. 202 M.H.

This subject embraces a study of commercial orcharding; each fruit is studied with reference to planting, cultivating, pruning, fertilizing, picking, packing, storing and marketing. For Two-Year Students, First Year. *1 Lec., 1 Rec., 1 Lab. per week. 1st S.*

34. Orchard Problems. Prof. Gourley. 202 M.H.

Dealing with the principal problems of farm orchards and commercial orchard management. This subject is designed to show the

application of the principles of fruit growing to practical conditions. Elective for Two-Year Students, Second Year.

1 Lec., 1 Lab. per week. 2d S.

35. Greenhouse Management. Mr. Scherrer. 202 M.H.

Combined lecture, demonstration and laboratory work in greenhouse management. Elective for Two-Year Students, Second Year.

1 Lec., 1 Rec., 1 Lab. per week. 1st S.

MATHEMATICS.

MR. YOUNG.

31. Practical Arithmetic. Mr. Young. 301 M.H.

A review of arithmetic with particular reference to decimal fractions, mensuration, and percentage, showing the application of these principles to the solution of practical farm problems. For Two-Year Students, First Year. *2 Rec. per week. 1st S.*

MILITARY SCIENCE AND TACTICS.

LIEUT. SUTHERLAND.

Unless excused by proper authority, all male students are required to complete two years' satisfactory work in drill and two years' satisfactory work in theoretical military science.

Drill.

Drill includes practical instruction in the following subjects: close and extended order drills by company and battalion, advance and rear guards, outposts, marches, ceremonies, battalion review, parades and guard mounting, guard duty, calisthenics and gymnastics, rifle practice, first aid to the injured. The two exercises in drill count for one hour of credit.

31. Military Drill. Lieut. Sutherland. Armory.

For Two-Year Students, First Year. *2 Drill exercises per week. 1st S.*

32. Military Drill. Lieut. Sutherland. Armory.

For Two-Year Students, First Year. *2 Drill exercises per week. 2d S.*

33. Military Drill. Lieut. Sutherland. Armory

For Two-Year Students, Second Year.

2 Drill exercises per week. 1st S.

34. Military Drill. Lieut. Sutherland. Armory.

For Two-Year Students, Second Year.

2 Drill exercises per week. 2d S.

Military Science.

31. Infantry Drill Regulations. Lieut. Sutherland. 105 Armory.

Practical instruction and lectures. For Two-Year Students, First Year. *1 Rec., per week. 1st S.*

32. Manual of Guard Duty and Small Arms Firing Regulations.
Lieut. Sutherland. 105 Armory.

Practical instruction and lectures. For Two-Year Students, First Year.

Prerequisite—Military Science 31. *1 Rec. per week. 2d S.*

33. Field Service Regulations. Lieut. Sutherland. 105 Armory.

For Two-Year Students, Second Year.

Prerequisite—Military Science 32. *1 Rec. per week. 1st S.*

34. Field Service Regulations. Lieut. Sutherland. 105 Armory.

Lectures on advance guards, outposts, etc. Continuation of Military Science 33. For Two-Year Students, Second Year.

Prerequisite—Military Science 33. *1 Rec. per week. 2d S.*

PHYSICS.

PROF. FISHER, MR. MORAN.

31. Elementary Physics. Mr. Moran. 1–35, 1–37 D.H.

Practical applications of important physical principles in mechanics and heat, including a study of steam and gas engines. For Two-Year Agricultural Stubents, Second Year. *2 Rec., 1 Lab. per week. 1st. S.*

NOTE.—A deposit of $1.00 is required at the beginning of the semester for notes and breakage; balance returned at end of year.

SHOP WORK.

MR. BATCHELDER, MR. CAHILL.

32. Wood Work. Mr. Batchelder. Second Floor of Shop.

Exercises in carpenter work, joinery and framing. Bench exercises adapted to farm uses. For Two-Year Students, First Year.

1 Lab. per week. 2d S.

* Students who are excused from drill by competent authority are required to take additional work in some subject equivalent in hours to the military work from which they are excused.

34. Forging. Mr. Cahill. First Floor of Shop.

This is a study in the forging of iron and steel and is designed to teach the operation of drawing, upsetting, welding, twisting, splitting, and punching. A study is made of the construction, care and management of the forge and instruction given in tempering, case hardening and annealing. For Two-Year Students, Second Year.

1 Lab. per week. 2d S.

SOCIOLOGY.

PROF. GROVES, PROF. SIMMERS.

31. Elementary Social Science: Sociology and Rural Education.
Prof. Groves, Prof. Simmers. 201 Lib.

An elementary study of the social conditions, forces, and institutions of the rural and small communities, especially in the New England states. The purpose of this course is the development of a social basis for leadership and the fulfillment of the obligations of an educated citizenship in the country and village communities. The second part of the semester will be given up to a study of the problems of rural education and will be conducted by the head of the department of education. For Two-Year Students, Second Year.

3 Rec. per week. 1st S.

ZOÖLOGY.

MR. BATCHELDER.

31. Human Physiology and Hygiene. Mr. Batchelder. 212 T.H.

A study of the structure, physiology and care of the human body. Special attention will be given to the fundamental principles of zoölogy, the nature of parasitic and bacterial diseases and the means of prevention. For Two-Year Students, First Year. *3 Rec. per week. 1st S.*

TWO-YEAR COURSE IN ELEMENTARY INDUSTRIAL ENGINEERING.

Because of the splendid results secured in the two-year course in Agriculture, the trustees have been encouraged to offer a two-year course in Elementary Engineering, beginning in the fall of 1915.

By this training, any young man, of somewhat mature years, who is interested in any form of mechanics and who desires to fit himself for a profitable position in the industries, will find opportunity to increase his efficiency and thus his earning power. The course is peculiarly adapted to those who have had more or less shop experience. Any young man who is ambitious, industrious and of good moral character, may well consider the advantages here offered.

This course will be offered to young men who are likely to enter the mills, factories and machine shops of the state; who will have to do with the practical problems of the telephone, gas engines, the application of water power and other industries. It is not intended to establish a trade school in any sense, but it is hoped that the fundamental principles of mechanics, developed in a practical way, will be of direct benefit to the students who take these courses. It will be the endeavor to provide an opportunity for wage earners to improve their efficiency and thereby better their own and the community's well-being.

The greatest treasure which this country holds today is the undeveloped skill and vocational possibilities, not only of the thousands of our workers everywhere, but of the great army of youth who pass annually from the doors of our elementary schools to serve in the shop, the field and the office. It is highly important to provide some form of vocational training for every boy who can afford to spend even a year or two.

In the training we have in mind for the industrial workers of this state, the purpose is two-fold. First, to increase

the general intelligence of young workers and to lead them to understand better their social and civic duties. Second, to increase their industrial intelligence and skill and to develop capacity for advancement within a given trade where such opportunity exists, or where it does not, to prepare for some skilled and remunerative work in another line.

The course offered will be simple, practical and fundamental. It will endeavor by every proper means, to lay a foundation, broad in its character, and one that will bring to the student a knowledge of underlying principles. Those who will come to take this course will gain in manual skill and productive power; they will gather a certain store of industrial knowledge; but they will also, it is hoped, acquire a certain initiative, a power of construction that will add definitely to their earning power.

Who May Enter This Course and How.—These two-year courses will be open to any young man, sixteen years or more of age who has a knowledge of the ordinary subjects taught in the grades. No written examinations will be required.

The course the first year will include instruction in the industrial application of electricity, in industrial physics, in applied mechanics, in mechanical drawing, in shop work, in practical mathematics, in English, in military science and in American citizenship.

The second year will include instruction in the industrial application of electricity, in electric controlling devices, in electrical design, in shop work, in power plant design, in the economics of business enterprise, in military science and in sanitation and hygiene for self, home and shop.

COURSES OF STUDY.

(For details, see description of studies which follow.)

TWO-YEAR COURSE IN INDUSTRIAL ELECTRICITY.

FIRST YEAR, FIRST SEMESTER.

		Credit Hours.
Electrical Engineering 81	Industrial Application of Electricity.	
	Recitation periods	2
	Laboratory periods	1
Mechanical Engineering 81	Applied Mechanics.	
	Recitation periods	2
	Laboratory periods	1
Drawing 81	Mechanical Drawing	2
Shop Work 81	Shop Work	3
Mathematics 81	Practical Mathematics	2
English 81	English	3
Military Science 81	Military Science	1
Drill 81	Drill	1

FIRST YEAR, SECOND SEMESTER.

Physics 82	Industrial Physics.	
	Recitation periods	4
	Laboratory periods	3
Drawing 82	Mechanical Drawing	2
Shop Work 82	Shop Work	3
Mathematics 82	Practical Mathematics	2
Military Science 82	Military Science	1
Drill 82	Drill	1
Political Science 82	American Citizenship	2

SECOND YEAR, FIRST SEMESTER.

Electrical Engineering 83	Industrial Application of Electricity.	
	Recitation periods	2
	Laboratory periods	1
Electrical Engineering 85	Electric Controlling Devices	2
Electrical Engineering 87	Electrical Design	2
Shop Work 83	Shop Work	3
Electrical Engineering 89	Power Plant Design	3

		Credit Hours
Economics 81	The Economics of Business Enterprise	3
Military Science 83	Military Science	1
Drill 83	Drill	1

SECOND YEAR, SECOND SEMESTER.

Electrical Engineering 84	Industrial Application of Electricity.	
	Recitation periods	2
	Laboratory periods	1
Electrical Engineering 86	Electric Controlling Devices	2
Electrical Engineering 88	Electrical Design	2
Shop Work 84	Shop Work	3
Electrical Engineering 90	Power Plant Design	3
Military Science 84	Military Science	1
Drill 84	Drill	1
Physiology 82	Sanitation and Hygiene	3

TWO-YEAR COURSE IN INDUSTRIAL MECHANICS.

FIRST YEAR, FIRST SEMESTER.

Electrical Engineering 81	Industrial Application of Electricity.	
	Recitation periods	2
	Laboratory periods	1
Mechanical Engineering 81	Applied Mechanics.	
	Recitation periods	2
	Laboratory periods	1
Drawing 81	Mechanical Drawing	2
Shop Work 81	Shop Work	3
Mathematics 81	Practical Mathematics	2
English 81	English	3
Military Science 81	Military Science	1
Drill 81	Drill	1

FIRST YEAR, SECOND SEMESTER.

Physics 82	Industrial Physics.	
	Recitation periods	4
	Laboratory periods	3
Drawing 82	Mechanical Drawing	2
Shop Work 82	Shop Work	3
Mathematics 82	Practical Mathematics	2
Military Science 82	Military Science	1
Drill 82	Drill	1
Political Science 82	American Citizenship	2

SECOND YEAR, FIRST SEMESTER.

		Credit Hours
Electrical Engineering 83	Industrial Application of Electricity.	
	Recitation periods	2
	Laboratory periods	1
Mechanical Engineering 83	Applied Mechanics.	
	Recitation periods	3
	Laboratory periods	2
Mechanical Engineering 85	Elementary Machine Design	2
Shop Work 83	Shop Work	3
Economics 81	The Economics of Business Enterprise	3
Military Science 83	Military Science	1
Drill 83	Drill	1

SECOND YEAR, SECOND SEMESTER.

Electrical Engineering 84	Industrial Application of Electricity.	
	Recitation periods	2
	Laboratory periods	1
Mechanical Engineering 84	Applied Mechanics.	
	Recitation periods	3
	Laboratory periods	2
Mechanical Engineering 86	Elementary Machine Design	2
Shop Work 84	Shop Work	3
Military Science 84	Military Science	1
Drill 84	Drill	1
Physiology 82	Sanitation and Hygiene	3

DESCRIPTION OF STUDIES.

DRAWING.

PROF. HUDDLESTON, MR. LATON.

81. Mechanical Drawing. Mr. Laton. 3–52 D.H.

This subject is intended primarily to develop power in the individual to express through drawing his ideas, particularly as they relate to industrial problems. To accomplish this, instruction will be given in free-hand lettering, in the use of drafting instruments, and in the explanation and study of systems of object drawing, including projection drawing as a study of the relation of different views of a given object; also of isometric drawing as a study in pictorial representation of machines and machine parts. The whole object is to give power of expression through the pencil and develop habits of exact thinking. For First Year Two-Year students in Industrial Mechanics and Industrial Electricity. *Two drawing periods per week. 1st S.*

82. Mechanical Drawing. Mr. Laton. 3–52 D.H.

The object of this is to develop skill and power in the visualizing and sketching of machines and machine tools, such as the student uses in actual shop practice. The work will consist of definite instruction and continued practice in the making and the reading of shop and assembly drawings, tracings and blue prints, including a study of shop and drafting room methods. For First Year Two-Year Students in Industrial Mechanics and Industrial Electricity.

Prerequisite—Drawing 81. Two drawing periods per week. 2d S.

ECONOMICS.

PROF. SMITH.

81. The Economics of Business Enterprise. Prof. Smith. 204 Lib.

This subject will be a brief survey of the principles which underlie business activity. Its chief aim will be to show the dependence in business life of each member of society upon every other member and the problems which arise from that relationship. Such a study involves the various goals of economic activity and economic ideals. It makes necessary an understanding of the steps by which the world of industry has arrived at its present stage and the influence which natural conditions like climate and various natural resources have had upon that development. Since our great economic problems are largely problems of values, some time will be spent in considering the principles which determine the values of commodities, and of capital and labor, money and exchange. For Second Year Two-Year Students in Industrial Mechanics and Industrial Electricity. *3 Rec. per week. 1st S.*

ELECTRICAL ENGINEERING.

81. Industrial Application of Electricity. 1–29 D.H.

In the recitation periods, there will be studied the general principles of electricity and magnetism; the general principles involved in the wiring of buildings in order that electricity may be used for electric lighting, electric power and for other domestic purposes; a study will be made of the requirements of the National Board of Fire Underwriters in connection with electrical installations.

In the laboratory periods, actual experiments will be performed to illustrate the different types of electric wiring, including the use of the various electrical fittings and their proper installations; various experiments will be performed to illustrate in a practical way the general principles of electricity and magnetism as taken up in the

recitation periods. The laboratory periods will run parallel with the recitation periods and will give a student the actual practical applications of the different principles taken up. For First Year Two-Year Students in Industrial Mechanics and Industrial Electricity.

2 Rec., 1 Lab. per week. 1st S.

83. Industrial Application of Electricity. 1–29 D.H.

In the recitation periods, there will be described the principles of electric dynamos and motors, both direct and alternating current, the method of computing the size of feeders and transmission circuits; a practical study of measuring instruments, electrical safety devices, switches, wattmeters, etc.; simple switchboard construction and the method used in the care and operation of the switchboard equipment.

In the laboratory periods, actual experiments will be performed on dynamos and motors, both direct and alternating current, showing the method of connecting, operating and care of same; experiments will be performed to show the fall of potential on transmission circuits and feeders, also the use, adaptability and method of connecting in circuit various types of electrical measuring instruments. For Second Year Two-Year Students in Industrial Mechanics and Industrial Electricity. *2 Rec., 1 Lab. per week. 1st S.*

84. Industrial Application of Electricity. 1–29 D.H.

In the recitation periods, there will be studied the fundamental principles and operation of telephones, including bridging, series and intercommunicating types; a study of commercial testing for faults in dynamos and motors and other electrical devices and a practical study will be made of general repair work, including materials available for such work and the adaptation of these materials to different classes of repair work.

In the laboratory periods, experiments will be performed on the different types of telephones including the taking apart and putting together of every different part of the telephone including transmitter, receiver, induction coil, ringer, magneto, switches, etc.; actual practice will be given in repair work, winding of armatures, transformers, etc.; experiments will be arranged for testing out and locating faults in dynamos, motors, transformers, etc. For Second Year Two-Year Students in Industrial Mechanics and Industrial Electricity.

2 Rec., 1 Lab. per week. 2d S.

85. Electric Controlling Devices. 1–29 D.H.

This subject will include a careful study of the various forms of electric controllers; automatic starters used in connection with motors; no voltage and no field release starting rheostats; overload devices, including circuit breakers, time relays, etc., for the protection of motors

and dynamos; remote controlling devices; methods and apparatus used for automatically stopping and starting motors at points remote from the motor, including the method of so connecting a pump to an electric motor that it will automatically start when the water in the tank has fallen to a certain level and will automatically stop when the water has reached a certain level. For Second Year Two-Year Students in Industrial Electricity. *2 Rec. per week. 1st S.*

86. Electric Controlling Devices. 1–29 D.H.

This subject will include a careful study of the so-called Tirrell regulators used for automatically keeping the supply voltage constant, including regulators that are adapted for direct current generators and also adapted to alternating current generators, both single phase and polyphase; induction feeder regulators for producing constant voltage on an alternating current feeder when the supply voltage varies between quite wide limits; the principle and operation of mercury arc rectifiers; Murphy electricity rectifiers; the principle and care of electric storage batteries and their application to industrial service; principle and care of transformers, both constant potential and constant current types, and their application to industrial service. For Second Year Two-Year Students in Industrial Electricity. *2 Rec. per week. 2d S.*

87. Electrical Design. 1–28 D.H.

Under this subject there will be studied some of the fundamental and general principles upon which various electrical apparatus operate, such as controlling devices, rheostats, resistances, arc lamps, incandescent lamps, regulators, switches, circuit breakers, storage batteries, starting devices, etc. These various devices will be examined, taken apart and put together again, in order to see the actual methods of construction, the principles upon which each part operates and the relation of the parts. For Second Year Two-Year Students in Industrial Electricity. *2 Lab. per week. 1st S.*

88. Electrical Design. 1–28 D.H.

Under this subject principles will be developed by means of which it will be possible to figure out resistances, rheostats, switches, electromagnets, electric controlling devices, etc. For Second Year Two-Year Students in Industrial Electricity. *2 Lab. per week. 2d S.*

89. Power Plant Design. 1–29 D.H.

Under this subject there will be studied the equipment of an ordinary power house from a practical standpoint, special study being given to so-called isolated plants adapted for private use or for community use; the best choice of electrical machinery to meet different conditions; the relation between the various parts of the equipment, including

boilers, engines, switchboards, controlling devices, pumps, injectors and other auxiliaries; the operation and care of the equipment; the application and the adaptation in certain cases of fuel oil engines, gasoline engines, gas engines, water wheels as prime movers for operating electric dynamos for the generation of current. For Second Year Two-Year Students in Industrial Electricity.

2 Rec., 1 Lab. per week. 1st S.

90. Power Plant Design. 1–29 D.H.

Under this subject, there will be studied the principles and the practical features in design for hydro-electric developments, including some practical methods of measuring the flow of water, method of constructing dams and methods of measuring amount of power available in a stream; the design and construction of transmission lines, including various materials and supplies available for same; the care of pole line equipment, including the preservation of the poles themselves; the care of transformers, lightning arresters and other devices. For Second Year Two-Year Students in Industrial Electricity.

2 Rec., 1 Lab. per week. 2d S.

ENGLISH.

ASST. PROF. SCUDDER.

81. English. Asst. Prof. Scudder. 208 T.H.

The purpose of this subject is to teach self-expression. The man who is unable to present his thoughts clearly in speech or writing is greatly handicapped. Technical skill is robbed of its usefulness to him, because when he talks, he misrepresents himself. Men who hear him, unavoidably, if sometimes wrongly, mark him as lacking in intelligence. This study in English is to teach the student how to make others appreciate him. It is to teach him how to get full value for the skill and intelligence that may be his. It is to enable him to establish correct relations with his fellows.

The work will consist of written and oral exercises. The instruction will not be a drill in formal grammar, but will be an attempt in a practical way to develop the use of correct speech. For First Year Two-Year Students in Industrial Mechanics and Industrial Electricity.

3 Rec. per week. 1st S.

MATHEMATICS.

ASSOC. PROF. STECK.

81. Mathematics. Assoc. Prof. Steck. 206 T.H.

Special emphasis will be placed on the solution of practical problems related to industrial work. The instruction will include a review of the

fundamental principles of arithmetic; the use of simple formulas; the use of cross-section paper for graphical representation, etc. For First Year Two-Year Students in Industrial Mechanics and Industrial Electricity. *2 Rec. per week. 1st S.*

82. Mathematics. Assoc. Prof. Steck. 206 T.H.

Instruction will be given in the solution of plane triangles; simple geometrical construction; useful applications of algebra, etc. For First Year Two-Year Students in Industrial Mechanics and Industrial Electricity. *2 Rec. per week. 2d S.*

MECHANICAL ENGINEERING.

PROF. PORTER.

81. Applied Mechanics. Prof. Porter. 2–45 D.H.

The recitation periods will be devoted to lectures on the properties, commercial forms and methods of manufacture of the materials most used in engineering, such as wrought iron, cast iron, steel, brass, bronze and cement.

During the laboratory periods experiments will be made to determine the yield point, the breaking load per square inch; elongation and reduction of area of samples of material such as cast iron, wrought iron and steel. Experiments will be made on the compressive and tensile strength of cement. For First Year Two-Year Students in Industrial Mechanics and Industrial Electricity. *2 Rec., 1 Lab. per week. 1st S.*

83. Applied Mechanics. Prof. Porter. 2–48 D.H.

In the recitation periods there will be studied steam boilers, types of steam boilers, fire tube boilers, water tube boilers, boiler calculations, stays and stayings, heat and work, properties of steam, fuels, methods of firing, smokeless combustion of fuel, settings, pipings and boiler fittings, boiler accessories, inspection and care of boilers, types of steam engines, selection of types, rotative speed, piston speed, mean effective pressure, steam engine indicators, calculation of horse power, condensers and pumps, feed water heaters and economizers.

During the laboratory periods exercises will be given on valve setting, tests of steam boilers and engines, tests of auxiliary apparatus and pumps. These exercises will be carried on so as to illustrate by practical application the principles taught during the recitation periods. For Second Year Two-Year Students in Industrial Mechanics.

3 Rec., 2 Lab. per week. 1st S.

84. Applied Mechanics. Prof. Porter. 2–48 D.H.

During the recitation periods studies will be made of gas engines, gas engine cycles, types of gas engines, methods of governing, methods of

ignition, carburetors, gasoline and oil engines, natural gas, artificial gas and producer gas.

The laboratory periods will be devoted to tests on gas engines. For Second Year Two-Year Students in Industrial Mechanics.

4 Rec., 1 Lab. per week. 2d S.

85. Elementary Machine Design. Prof. Porter. 2–40 D.H.

Including rivets and rivét joints, screw threads and bolts, keys and cotters, journals, crank pins and collar bearings, axles and shafts, tooth gearing, belts and pulleys. Instruction includes practice in sketching, designing and making working drawings of machine details, the use of formulas and handbooks. For Second Year Two-Year Students in Industrial Mechanics. *2 Lab. per week. 1st S.*

86. Machine Design. Prof. Porter. 2–40 D.H.

The complete design of some simple machine, including calculation on the strength of the different parts and the making of complete working drawings. For Second Year Two-Year Students in Industrial Mechanics. *1 Rec., 2 Lab. per week. 2d S.*

MILITARY SCIENCE AND TACTICS.

LIEUT. SUTHERLAND.

Unless excused by proper authority, all male students are required to complete two years' satisfactory work in drill and two years' satisfactory work in theoretical military science.

Military Drill.

Drill includes practical instruction in the following subjects: close and extended order drills by company and battalion, advance and rear guards, outposts, marches, ceremonies, battalion review, parades and guard mounting, guard duty, calisthenics and gymnastics, rifle practice, first aid to the injured.

81. Drill. Lieut. Sutherland. Armory.

For First Year Two-Year Students in Industrial Mechanics and Industrial Electricity. *2 Drill exercises per week. 1st S.*

82. Drill. Lieut. Sutherland. Armory.

For First Year Two-Year Students in Industrial Mechanics and Industrial Electricity. *2 Drill exercises per week. 2d S.*

83. Drill. Lieut. Sutherland. Armory.

For Second Year Two-Year Students in Industrial Mechanics and Industrial Electricity. *2 Drill exercises per week. 1st S.*

84. Drill. Lieut. Sutherland. Armory.

For Second Year Two-Year Students in Industrial Mechanics and Industrial Electricity. *2 Drill exercises per week. 2d S.*

Military Science.

81. Military Science. Lieut. Sutherland. 105 Armory.

Practical instruction and lectures. For First Year Two-Year Students in Industrial Mechanics and Industrial Electricity.

1 Rec. per week. 1st S.

82. Military Science. Lieut. Sutherland. 105 Armory.

Manual of guard duty and small arms firing regulations. Practical instruction and lectures. For First Year Two-Year Students in Industrial Mechanics and Industrial Electricity.

Prerequisite Military Science 81. *1 Rec. per week. 2d S.*

83. Military Science. Lieut. Sutherland. 105 Armory.

Field service regulations. For Second Year Two-Year Students in Industrial Mechanics and Industrial Electricity.

Prerequisite Military Science 82. *1 Rec. per week. 1st S.*

84. Military Science. Lieut. Sutherland. 105 Armory.

Field service regulations. Lectures on advance guards, outposts, etc. A continuation of Military Science 83. For Second Year Two-Year Students in Industrial Mechanics and Industrial Electricity.

Prerequisite Military Science 83. *1 Rec. per week. 2d S.*

PHYSICS.

PROF. FISHER.

82. Industrial Physics. Prof. Fisher. 1–35, 1–37 D.H.

Devoted to the applications of scientific principles of mechanics and heat to practical uses. The mathematics needed are of the simplest, and particular attention is paid to good ways of calculating. Problems in large numbers are used for the illustration of the principles, and practice in the use of scientific instruments and in the experimental illustration of principles is given in the laboratory.

The work will include the laws of water pressure in pipes, tanks, etc.; the principle of work, and the efficiency of ideal and actual levers, pulleys, screws and their combinations; the laws of gas pressure,

* Students who are excused from drill by competent authority are required to take additional work in some subject equivalent in hours to the military work from which they are excused.

barometers, siphons, pumps, balloons; kinetic and potential energy of moving, falling and rotating bodies, pendulums, clocks, projectiles, fly-wheels, the hydraulic ram, etc.; elasticity and springs; temperature and thermometers, expansion and contraction, the measurement of heat, boiling, freezing, the properties of steam, combustion, heat conveyance, pipes and lagging, the relation of heat and work, heat engines. For First Year Two-Year Students in Industrial Mechanics and Industrial Electricity. *4 Rec., 3 Lab. per week. 2d S.*

NOTE.—A deposit of $1.00 is required at the beginning of the semester, for notes and breakage; balance returned at end of year.

PHYSIOLOGY.

PROF. JACKSON.

Physiology 82. Sanitation and Hygiene. Prof. Jackson. 212 T.H.

The purpose of this subject is to increase and maintain the efficiency of the human machine. With this in view, it will deal with the following:

(a) Sanitation of the Home. There will be dicusssed proper and improper sewage disposal; water supply; ventilation and other conditions of the home calculated to spread or favor the development of disease.

(b) Shop Sanitation. A discussion of the spread of bacterial diseases through improper shop sanitation. The effect of dust and other waste material on the health of the workmen and the importance of sunlight and proper ventilation.

(c) Personal Hygiene. A discussion of clothing, proper food, both mental and physical exercise, and other matters of personal hygiene.

(d) First aid treatment of injuries received in shop work will be considered, including the prevention of wound infection, permanent treatment of minor injuries and temporary treatment of major injuries pending the arrival of a physician.

Private conferences are solicited with students on any special problem of Hygiene and Sanitation. For first year two-year students in Industrial Mechanics and Industrial Electricity.

3 Rec. per week. 2d S.

POLITICAL SCIENCE.

82. American Citizenship. 202 Lib.

This subject will proceed on the theory that a proper and necessary equipment for life includes training in the fundamental principles of

good citizenship. The broad principles of the national constitution will be considered, together with a brief study of the constitution of New Hampshire. The subject, however, will be concerned chiefly with practical illustrations of the duties of citizenship and the relationship of man to man. For First Year Two-Year Students in Industrial Mechanics and Industrial Electricity. *2 Rec. per week. 2d S.*

SHOP.

MR. BATCHELDER, MR. CAHILL.

81. Shop Work. Mr. Batchelder. Second Floor of Shop.

Practice in the use of wood working tools; laying out work from drawings, mortising and framing; bench work and joinery; wood turning; the use of band and circular saws and wood planer. For First Year Two-Year Students in Industrial Mechanics and Industrial Electricity. *3 Lab. per week. 1st S.*

82. Shop Work. Mr. Batchelder. Second Floor of Shop.

Exercises in the construction of solid, split and loose piece patterns and core boxes, such as are found in ordinary practice in commercial pattern shops; practice in floor and bench moulding with different kinds of moulding sand, setting of cores and risers, methods of gating and venting, charging and managing the cupola. For First Year Two-Year Students in Industrial Mechanics and Industrial Electricity. *3 Lab. per week. 2d S.*

83. Blacksmithing. Mr. Cahill. Forge Shop.

This is a study in the forging of iron and steel and is designed to teach the operations of drawing, upsetting, welding, twisting, splitting and punching. A study is made of the construction, care and management of the forge and instruction given in tempering, case hardening and annealing. For Second Year Two-Year Students in Industrial Mechanics and Industrial Electricity. *3 Lab. per week. 1st S.*

84. Machine Shop Work. Mr. Cahill. Forge Shop.

Exercises in bench work, chipping, filing and scraping and laying out of work from drawings; a study of cutting edges and tool adjustments best suited for different metals together with a study of cutting speeds and feeds. Practice in operating the principal machine tools, such as the shaper, lathe, drill press, planer and milling-machine. For Second Year Two-Year Students in Industrial Mechanics and Industrial Electricity. *3 Lab. per week. 2d S.*

THE WINTER SHORT COURSES IN AGRICULTURE.

The college offers these short courses for the purpose of affording an opportunity for the boys, the young men, and the older men and women on the farms of our state to acquaint themselves with the latest and most approved principles and practices of agriculture. Since many of our farm people find it impossible to leave their homes during the spring, summer and fall months, these courses are given during the winter when most people can find time to slip away for at least a week.

There is no longer any question concerning the value of practical scientific training for those who are engaged in farming. The increasing interest in agricultural work, the higher prices of farm products and the keener competition in all lines of production is making an education and training more and more a necessity for the people on our farms. It is hoped that these "short courses" will open an additional avenue through which the college may prove its value and usefulness to the farmers of the state.

Admission.—The short courses are open to everybody over 16 years of age. They are arranged especially for the farmer, his son, his daughter, and his wife. There are no examinations.

OUTLINES OF THE COURSES.

Hay and Forage Crops.—This is the first course and will begin *Monday* afternoon *January 8*, and close *Saturday* noon, *January 13*.

Hay and forage crops to the amount of nearly eight million dollars are grown annually in New Hampshire. These crops not only greatly exceed all others in acreage but are the most valuable of all farm crops produced. It seems fitting, therefore, that a special course of instruction should be offered to those who are primarily interested in this line of crop production.

Orcharding.—This course will follow the one on Hay and Forage Crops, and will begin *Monday* afternoon, *January 15.*

Each year problems are arising in better methods of handling our orchards. Every new season teaches its lessons and the past one has been no exception. The excessive rainfall has impressed all growers that more thorough spraying will be necessary in order to secure clean fruit which can be packed as fancy grades.

During this week not only the fundamental problems in handling the apple orchard will be discussed, but also the peach orchard in New Hampshire, as well as small fruits and vegetables.

Poultry.—A whole week will be devoted to the course in Poultry which will begin *Monday* afternoon, *January 22.*

The poultry industry is a branch of agriculture which is particularly well adapted to New Hampshire. In 1910 the value of poultry and eggs produced on New Hampshire farms amounted to about $2,900,000. The importance of this branch of agriculture as a money producing crop has not yet been recognized by most farmers in the state.

The demand for poultry products, both winter and summer, is a large and increasing one in New Hampshire. About 90 per cent of the poultry products consumed in New England are imported, and as a result there is a large demand for home-grown products.

Farm Management and the Woodlot.—This course will begin *Monday* afternoon, *January 29.*

The term "farm management" is intended to cover what might be called the "business side of farming." Statistics show that the yearly net income of many farmers is less than the wages of a hired man. There are good systems of farm management and bad systems. In this course the things which control profits in farming, different systems of management and methods of business will be discussed.

There are many advantages in having a woodlot on every New Hampshire farm. In the first place it furnishes winter

work at a time when teams and men are apt to be idle. Secondly, the material from the lot can be used for general building purposes, fence repair, and for fuel. In this way, the expenses of the farm can be reduced, since it is much cheaper to log the material from your own lot than to buy it and pay some one else for getting it out for you.

On account of favorable growth conditions it is possible to grow more timber per acre per annum in New England than in any other section of the country except the Pacific Coast region. In the white pine, red pine, Norway spruce, and white ash, New Hampshire has tree species which can be counted on to resist insect and fungus attack, grow rapidly, and mature at a much earlier period than is possible with most tree species. The combination of good markets and rapid growth makes it therefore advisable to grow timber on every portion of the farm that is not more suitable for tillage.

FARMERS' WEEK.

The ninth annual Farmers' Week will begin *Tuesday, January 2.* A special program of the exercises during the week will be issued during the holidays, a copy of which will be sent to any one upon request.

This course is designed to meet the needs of the everyday practical farmer and his wife who cannot leave home for more than a few days, but who wish to get some new ideas concerning the latest and best methods of farm, orchard and dairy operations and of household work.

Meetings of various state organizations will be held during the week in connection with the regular program.

DAIRY COURSE.

The twenty-second annual Dairy Course will open *Monday, February 5,* and will close *Friday, March 9.*

Students expecting to take this course should present themselves at the Registrar's office in Thompson Hall on the opening day. Lectures and laboratory work will begin on the day following.

Instruction in Dairy Practice.—Instruction in the Dairy Course is given by lectures, recitations and by laboratory work in the barn, dairy and creamery. The equipment in the dairy building is such that the laboratory work can be made applicable both to farm and factory conditions. The student will have an opportunity to study the construction and efficiency, and the operation of the various machines used in handling of milk and making of butter. The use of the Babcock test in apportioning the money value of milk is regulated by state law. The importance of the test in the successful improvement of the dairy herd is becoming more and more apparent. The details of the test will be studied, and the student will practice testing milk, cream, skim-milk and buttermilk until fully competent to perform the work either for himself or for others.

The course in every respect is made as practical as possible and the instruction is planned to meet the needs of two classes of students: first, *buttermakers*, second, *dairymen* and *milk producers*.

Opportunities in Dairy Work.—The need of competent trained dairymen is greater than ever before. There is an increasing demand for first-class dairy products, such as butter, cheese, and condensed milk, and the making of these calls for first-class dairymen. The continuous campaign for pure milk in our cities is constantly opening up new positions for milk inspectors, and for men with training who can successfully manage dairy farms and care for the herd so as to produce sanitary milk economically. It also opens positions for men who are capable of operating milk depots and other dairy establishments. The organization of cow-test associations is opening up a new field for dairy workers. Although the college does not guarantee to find positions for those registered in the course it has opportunities to recommend students for a large number of positions. Inquiries for competent men are received throughout the year and thus far the College has been

unable to supply men for all the places it has been asked to fill.

Equipment.—The New Hampshire College with its new dairy building offers excellent opportunities for giving instruction in practical dairy work.

Entirely new equipment has been installed in the college creamery, each piece of machinery being run by an individual electric motor. In addition to the milk obtained from the college herd, the creamery receives milk and cream from about forty farms. By this arrangement sufficient milk for practical work is furnished at all times. The farm dairy is equipped with the leading kinds of hand separators and hand as well as small-power churns suitable for private dairies. The milk-testing and milk inspection laboratory is equipped with Babcock testers, sediment testers, acidmeters, and other apparatus necessary for inspection of milk and cream both as to fat content and other qualities. The creamery also contains bacteriology laboratories, a lecture room, offices, a reading room and an up-to-date milk bottling plant.

Dairy Cattle.—Representatives of the Jersey, Guernsey, Ayrshire and Holstein breeds are owned by the college and are used to acquaint the students with the different breeds and types of dairy cattle.

Prizes.—Through the courtesy of Mr. Thomas Jones Davis of Duluth, Minnesota, three suitable prizes will be given to students who rank the highest in judging dairy cattle of the different breeds.

Expenses.—Tuition in the short courses is free to residents of New Hampshire. Non-residents will pay a tuition fee of $2 for each of the one-week courses and $10 for the dairy course. Board and room will cost between $5 and $6 per week. Other expenses, including books, need not exceed a total of $5, although an allowance of $10 for the purchase of books to be taken home would be a good investment.

DAIRY CATTLE.

PROF. ECKMAN, MR. FAWCETT.

Animal Husbandry 42. Breeds and Breeding.

Lectures and recitations upon the origin, history, characteristics, and adaptability of the breeds of dairy cattle. The practical work will consist of scoring and judging the various breeds, and in tracing pedigrees of animals in the herd books.

Two lectures and one judging period per week.

Animal Husbandry 44. Diseases of Cattle.

This subject will consist of lectures and recitations upon the anatomy and physiology of the cow, with special reference to the digestive, reproductive and milk-producing organs. The common diseases, their causes and the methods of treatment will be discussed.

Three exercises per week.

Animal Husbandry 45. Feeds and Feeding.

Lectures and recitations upon the composition and digestibility of feeding stuffs. A detailed study of the different grains and feeds, and their value in a dairy ration. Practice will be given in computing and mixing rations for the dairy cow, and in fitting animals for the show ring.

Three exercises per week.

NEW HAMPSHIRE AGRICULTURAL EXPERIMENT STATION.

Most of the agricultural experiment stations of the various states, including that of New Hampshire, were founded in 1888 by an act of congress, approved March 2, 1887, known as the Hatch Act, in honor of its author. This act appropriated fifteen thousand dollars ($15,000) annually for the maintenance of an agricultural experiment station in each state. This act provides:

"That it shall be the object and duty of said experiment stations to conduct original researches or verify experiments on the physiology of plants and animals; the diseases to which they are severally subject with the remedies for the same; the chemical composition of useful plants at their different stages of growth; the comparative advantages of rotative cropping as pursued under a varying series of crops; the capacity of new plants or trees for acclimation; the analysis of soils and water; the chemical composition of manures, natural and artificial, with experiments designed to test their comparative effects on crops of different kinds; the adaptation and value of grasses and forage plants; the composition and digestibility of the different kinds of food for domestic animals; the scientific and economic questions involved in the production of butter and cheese; and such other researches or experiments bearing directly on the agricultural industry of the United States as may in each case be deemed advisable, having due regard to the varying conditions and needs of the respective states and territories." The act also provides that the results of such work shall be published in bulletins and reports.

A further endowment of the experiment stations to provide specifically for research work was made by the Adams Act, passed by congress and approved March 16, 1906, which provided an increased annual appropriation which

now amounts to $15,000 each year. This appropriation is specifically limited to the "necessary expenses of conducting original researches or experiments," and the rulings of the United States Department of Agriculture, which is vested with the supervision of the expenditures under this act, require that this appropriation be spent in fundamental investigations or researches to determine the underlying causes and principles of agricultural science, rather than for mere experiments to secure results of immediate practical application as contemplated under the Hatch Act appropriation. The purposes of the two acts are, therefore, supplementary but distinct.

The New Hampshire Agricultural Experiment Station is organized as a department of the New Hampshire College of Agriculture and the Mechanic Arts, and is administered by a board of control, elected by its board of trustees.

The publications of the station comprise 177 bulletins of the regular series and 17 circulars, 9 technical bulletins, 8 scientific contributions, and 4 school bulletins. The bulletins are issued at irregular intervals and are sent to all residents of New Hampshire requesting them. Back numbers will be sent as long as the supply lasts. Lists of available publications will be sent upon request.

The above quotations taken from the Hatch and Adams acts are sufficient to indicate the true function of this and other experiment stations called into being by the passage of those laws. At first the experiment stations found it difficult to resist the popular demand made upon them to enter the extension field, to the neglect of research, but it is to the credit of the officials having the directing and executing of those laws in charge that our stations have proved true to their trust. If the stations had not devoted their energies to the fields of original research our agriculture could not possibly be upon the high plane which it occupies to-day.

The introduction of the extension service as a recognized part of the work of this and other similar institutions only serves to emphasize the importance of experiment station

work. In our haste to produce immediate results we sometimes lose sight of the value of the work of our experiment stations. We do not realize the debt agriculture owes to the scientists who are willing to devote their life work to the study of one subject, or at least a very few subjects, without thought to personal ambition and advancement, but purely seeking after truth and the advancement of science.

We can, perhaps, best indicate in a brief way the present work of the New Hampshire Experiment Station by calling attention to some of those projects which are receiving special study and attention.

ADAMS FUND.

Agronomy Department.—Water as a limiting factor in the production of corn.

Botanical Department.—A study of the toxic action of fungicides to parasitic fungi; physiology of the apple; a study of the effect of fungicides and insecticides on plants.

Chemical Department.—Potash in clay soils.

Entomological Department.—Control of root maggots by insecticides.

Horticultural Department.—Plant breeding: carnation breeding, squash breeding; fruit bud formation.

Animal Husbandry Department.—Sheep breeding.

The New Hampshire Experiment Station is glad at all times to give advice and assistance regarding all lines of agriculture and we invite you to make demands upon the station whenever you feel that this institution can be of assistance to you in any capacity. The experiment station is at the service of the citizens of New Hampshire at all times.

HATCH FUND.

Agronomy Department.—Variety tests of corn; ear row test of corn; fertilizer tests on grass lands; alfalfa improvement; clover plant selection; timothy selection and breeding; investigations on potato culture and fertilization.

Botany Department.—Effect of storage temperature on keeping qualities of potatoes; apple diseases.

Entomological Department.—Control of black flies and midgets; economic collection of insects; arsenical residues on fruit, foliage and grass, following spraying; the control of browntails.

Horticultural Department.—Variety tests of plums; variety tests of apples; variety tests of small fruits; blueberry industry in New Hampshire.

Chemical Department.—Effect of lime on New Hampshire soils.

Forestry Department.—Experiments in raising forest tree seedlings; experiments in establishing artificial forests of different species; experiments in immature white pine stands.

EXTENSION SERVICE.

The last few years have witnessed in this country a remarkable growth in the development of methods of teaching agriculture. The attitude of the public in general, as well as the rural population, toward technical agricultural training has become decidedly favorable. This change in feeling by the public toward the work of institutions offering training in agriculture has made possible and is responsible to a large extent for the unprecedented progress which has been made in agricultural teaching during the last dozen or fifteen years.

The extension service is intended to serve as a medium by which to take the work of both the college classroom and the experiment station fields and laboratories directly to

the homes and to the fields of the farmers. It is very difficult to place any just estimate upon the value of such service to a state or to the nation. The farmer's cause is no longer considered of interest only to him. It is recognized today as never before that upon the prosperity of the farmer depends quite largely the general prosperity of all classes of people. The present high cost of living has done much to attract the attention of people to the relation which the farmer and his interests bear to them personally.

What the colleges and universities are to those young men and young women who come within their walls, the extension service is, only to a lesser degree, to the thousands who are beyond the reach of the classroom. In this state, for example, we have about six hundred students and fifty enrolled at New Hampshire College, while there is a rural population in the state of nearly two hundred thousand, many of whom it is possible to reach in some tangible and helpful way through the extension service.

It may be of interest to note some of the things it has been possible to accomplish under the above named conditions and what the work should mean to the industrial interests of the state.

Space will allow only sufficient room to name some of the activities of the extension service which have been given special emphasis during the past year. This brief outline will perhaps serve to indicate in a general way the scope of the work and something as to its value to the industrial interests of the state.

Correspondence: Letters of inquiry.

Field Demonstrations: In coöperation with farmers.

Variety Tests of Corn: In coöperation with farmers, and on county farms.

Top Dressing Hay Lands: In coöperation with farmers.

Value of Lime on New Hampshire Soils: In coöperation with farmers.

Orchard Sod Mulch.

Spraying Demonstrations.

Orchard Cover Crops.

Pruning and Spraying Demonstrations.

Agricultural Reading Courses: Nine subjects.

Special Days at the College: Orchard Day, Poultry Day, Dairy Day.

College and Station exhibits at Fairs and at Agricultural meetings.

Orchard Demonstrations: Hillsborough County.

Dairy Demonstrations: Grafton County.

Boys' Club Work: Rockingham, Merrimack, Hillsborough and Cheshire Counties.

Girls' Club Work: Rockingham, Merrimack, Hillsborough and Cheshire Counties.

Soil Fertility and Crop Rotation Demonstrations: Rockingham County.

Extension Publications: 58 extension press bulletins, 15 extension circulars, 4 extension bulletins.

Extension literature is sent to a mailing list of 12,000 in the state. Publications are sent free to every one requesting them.

COÖPERATIVE AGRICULTURAL EXTENSION WORK SMITH-LEVER FUND.

Under the provisions of an act of Congress approved May 8, 1914, New Hampshire, the same as every other state, is to receive the sum of $10,000 from the federal government for supplementing and strengthening the extension work of the Agricultural College.

In addition to the annual appropriation of $10,000, each state is to share in increased allotments for seven years in the proportion which the rural population of each state is to the total rural population of all the states as determined by the next preceding federal census provided the state

shall appropriate an equal sum. If New Hampshire fulfills her part in carrying out the provisions of the Smith-Lever law, the state will receive in 1922–23 and thereafter, from the federal government, annually the sum of $24,572, for conducting coöperative demonstration work in agriculture and home economics.

This financial assistance from the federal government coming to New Hampshire as it does at a time when state and other funds are inadequate for meeting the demands which are constantly being made upon the college, will make it possible for the extension service to strengthen and develop its work along all lines and inject new life into every branch of the service.

The organization of distinct departments or divisions of extension service in connection with our state colleges and universities gives recognition and standing to the threefold function teaching resident students; conducting investigations; and carrying information and assistance from the college and station into all parts of the state, or extension work of the institution and is a decided step in advance.

It will no longer be necessary for the experiment stations to carry on general miscellaneous demonstrations under the guise of research. In the earlier history of our experiment stations, before the work was clearly defined, they were practically compelled by popular demand to engage in demonstration work.

The extension service with its own corps of men will relieve the college teaching staff and station workers from much of the miscellaneous extension work which they, of necessity, have been compelled to carry on in the past.

This new organization will permit the selection and assigning of such duties to the individual as he seems best fitted to perform, which will work for efficiency in all three departments or divisions. We have the Smith-Lever law to thank for hastening the time of bringing these things to pass.

The United States Department of Agriculture has created what is known as the States Relations Service to take charge of and coöperate with the several states in carrying out the provisions of the Smith-Lever law. Having the extension work of each state closely associated with the work of the United States Department of Agriculture through the States Relations Service will be a very potent factor in unifying and strengthening the extension work throughout the United States.

In starting the coöperative extension work in New Hampshire it has been the plan *first* to perfect an efficient organization through which to work; *second*, to recognize and attempt to assist in the development of the most important branches of agriculture in the state and to meet the most urgent needs for assistance in home economics.

In carrying out this general scheme and the provisions of the memorandum of understanding entered into with the States Relations Service, whereby all extension work conducted with Smith-Lever funds shall be on the project basis, approved by them, the following eight projects have been adopted.

Project No. 1. Organization of Coöperative Agricultural Extension work.

Project No. 2. County Agricultural Agents.

Project No. 3. Extension Instruction—Home Economics.

Project No. 4. Dairy Cow Test Associations.

Project No. 5. Orchard Demonstrations.

Project No. 6. Movable Schools.

Project No. 7. Demonstrations in Vegetable Gardening.

Project No. 8. Farm Management Demonstrations.

Project No. 1: *Organization of Coöperative Agricultural Extension Work.*

Project No. 1 has to do with the general organization and administration of the extension work conducted with Smith-Lever funds.

Project No. 2: *County Agricultural Agents.*

Emphasis has been given to country agricultural agent work because it has been demonstrated beyond question that by having an extension representative located in each county, it makes the most efficient organization within a state for conducting extension activities.

The county agent movement serves also as an important means by which the extension service of the college may enter into coöperative agreements with the County Farmers Association and with the Office of Farmers Coöperative Demonstrations in the Northern and Western States, a new office in the United States Department of Agriculture which has immediate charge of the coöperative county agent work in the northern and western states.

For financial reasons the county agent movement through the plan of coöperation cited above makes available $4 for every $1 of college Smith-Lever funds expended in the county, which, in view of the unquestioned value of county agent work, commends this type of extension service.

We have five counties organized at present and as fast as other counties can be organized it is planned to appoint other county agents until there is an agent in each county in the state.

A state leader of county agent work has been appointed to take immediate charge of the work. The state leader is employed jointly and represents the extension service of the college and the Office of Farmers Coöperative Demonstration Work in the Northern and Western States.

Project No. 3: *Extension Instruction, Home Economics.*

The Smith-Lever law makes provision for giving demonstration work in home economics. In the past the college has received a great many requests for lectures and demonstrations in home economics from all parts of the state. It has been possible to respond to only a few of these requests. Under the present plan of campaign a woman has been employed to organize women's clubs in different parts of the state.

The instructor will give demonstrations and instructions in home economics which will tend to stimulate more interest in rural life and help to improve the healthfulness, the social life, and the economic conditions of the farm homes of the state.

The instructor in home economics plans to visit the clubs at least once a month and whenever possible twice a month. Courses for reading and study are outlined to cover ten to twelve months and have to do with foods, household management, textiles and clothing, and the care and feeding of children.

Project No. 4: *Dairy Cow Test Associations.*

There are ten dairy cow test associations in successful operation in the state. These organizations are playing an important part in improving dairy conditions. Through these associations the dairy farmers are enabled to weed out unprofitable cows, they are encouraged to keep better stock, keep records of farming operations, and to feed their animals more judiciously and economically. This work reveals the truth to the dairy farmer.

A man is placed in charge of dairy cow test association work in the state to assist in the organizing of new associations, to work with the testers, to see that they are making the most of their opportunities, to be of service to the members of the associations, and to compile and publish the results of the work.

Project No. 5: *Orchard Demonstrations.*

New Hampshire is naturally an orchard state and there is a lot of interest being taken in all forms of fruit-growing. Orchard culture makes up an important branch of the agriculture of the state.

In order that the extension service may be of the greatest service to the fruit-growers of New Hampshire a man has been engaged to devote all of his time to carrying on orchard demonstrations and to giving instructions in fruit culture.

Pruning, spraying, and packing demonstrations will be

given at the proper season and definite forms of orchard demonstrations setting forth approved orchard practices will be carried on in coöperation with practical growers of the state. Meetings will be held in the demonstration orchards from time to time so that results may be noted.

Project No. 6: *Movable Schools.*

To meet the demand for assistance in community improvement work movable schools have been organized. The schools are held preferably in some of the smaller rural communities as they seem to be especially appreciated in such localities. These schools last four days and the lectures and demonstrations are made just as practical as it is possible to make them. Wherever possible the demonstrations are given in the field, the orchard, or in a barn in the neighborhood. Thirteen schools were held last winter with an attendance of 3,417, an average attendance at each session of about thirty-five.

These movable schools offer exceptional opportunities for the extension service to become acquainted with the people and the needs of the communities. Owing to the pleasant relations which are established through the medium of the schools it is possible to render still more valuable assistance to these neighborhoods through follow-up work.

Project No. 7: *Demonstrations in Vegetable Gardening.*

Vegetable gardening is a much neglected branch of farming in New Hampshire. Our manufacturing cities in the state create good markets. At present a large part of the vegetables consumed in our cities are grown outside the state.

For many reasons our market gardeners are not realizing from their labors and investments what they should. It is with a desire to be of service to some of those engaged in growing vegetables for market that an experienced and trained market gardener has been employed to work with the market gardeners in the vicinity of Manchester, Nashua and Concord. The work is of a practical nature and the

demonstration plots are carried on in coöperation with growers supplying vegetables for local markets.

It is hoped to show through these demonstration plots how the growers may meet more acceptably the demands of the local markets, and at the same time make it profitable for them to do so.

Project No. 8: *Farm Management Demonstrations.*

The New Hampshire State College is coöperating with the United States Department of Agriculture in making studies of the various systems of farm management in all parts of the state in order to determine the best systems of farming for each locality.

Four hundred and fifty farm surveys have been made in six counties. Most of these records have been returned to each individual farmer in the area covered by the survey in such a way that he can compare his own farm records with the average, and some of the best farms in that part of the state.

This covers in a brief way the plan of organization and lines of work which have been inaugurated with Smith-Lever funds for conducting extension work in agriculture and home economics in New Hampshire.

DEGREES CONFERRED IN 1915.

MASTER OF SCIENCE.

Batchelder, Chester Howard, B.S., 1913.

BACHELOR OF SCIENCE.

Agricultural Division.

Brown, Leon Frank.
Corriveau, Paul Edward.
Dearth, Raymond Edson.
Elliott, John Spalding.
Gamash, Albert William.
Sawyer, Clifford Augustus.
Swett, Walter Whittier.

Arts and Science Division.

Bartlett, Arnold Eastman.
Bean, Raymond Jackson.
Bowden, Raymond Charles.
Bronson, Forrest Dinsmore.
Came, Ralph Elbert.
Clark, Byron Humphrey.
Crafts, Leland Whitney.
Haines, Ray Edward.
Halvorsen, Henry Olaf.
Hobbs, James Francis, Jr.
Hoitt, Alice Joanna.
Hoitt, Caroline Elizabeth.
Hopkins, Anna Morse.
Jenkins, Everett Kelley.
Kinder, Roland Hugh.
Knight, Richard Adams.
Langley, Lester Libbey.
McKone, Esther Gladys.
Montgomery, Earl Roger.
Murdoch, Armand Leigh.
Murphy, Mary Frances.
Nash, Marion Edgerly.
Odiorne, Benjamin Gilbert.
Parker, Walter Francis.
Plumer, Helen Waldron.
Poland, Nellie Guild.
Reed, Clinton Arthur.
Story, Irving Chellis.
Waldron, Lena Vernice.

Engineering Division.

Bartlett, William Sanborn.
Bonardi, Jack.
Broggini, Marion James.
Davis, Charles Wesley.
Dustin, True Page.
Farnham, Harry Lothrop.
Garside, John Ingraham.
Grady, John Leo.
Grant, Arnold Jay.
Loomis, Glenn Moore.
Paulson, Carl Gustav.
Thompson, John Fawdrey.

Unclassified.

Fernald, Brackett Briton.
Fogg, Sherburne Hilliard.
Key, Yuling George.
McCartney, Arthur Orcutt.
Watson, Earl Elwin.
Welsh, Russell Hamilton.

Two-Year Certificates in Agriculture.

Allen, Merritt E.
Cram, Theodore Francis.
Crosby, Robert Frank.
Hall, Elmer Oliver.
Harriman, Samuel R.
Hazen, Gardner Williamson.
Learmonth, John Gullion.
McKenzie, Robert J.
Morse, Oscar Varnum.
Osborne, John Fred.
Runnals, George Alvin.
Seymour, George Walter.
Smith, Perley Jaques.
Whalin, Robert Alden.

HONOR LIST FOR 1915.

SPECIAL HONOR.

Average of 90 for the year's work.

1915.

Leland Whitney Crafts,	Arts and Science Course.
Marion Edgerly Nash,	Arts and Science Course.
Walter Whittier Swett,	Animal Husbandry and Dairying Course.

1917.

Phyllis Mary Blanchard,	Arts and Science Course.

1918.

Charles Cummings,	Agricultural Course.
Martha Luena Hoitt,	Home Economics Course.

HONOR.

Average of 80 for the year's work.

1915.

Raymond Jackson Bean,	Arts and Science Course.
Jack Bonardi,	Chemical Engineering Course.
Raymond Charles Bowden,	Arts and Science Course.
Mario James Broggini,	Chemical Engineering Course.
Ralph Elbert Came,	Arts and Science Course.
Paul Edward Corriveau,	General Agricultural Course.
Charles Wesley Davis,	Chemical Engineering Course.
Raymond Edson Dearth,	Animal Husbandry and Dairying Course.
Albert William Gamash,	Forestry Course.
John Leo Grady,	Electrical Engineering Course.
James Francis Hobbs, Jr.,	Arts and Science Course.
Alice Joanna Hoitt,	Arts and Science Course.
Caroline Elizabeth Hoitt,	Arts and Science Course.

Anna Morse Hopkins,	Home Economics Course.
Everett Kelley Jenkins,	Mechanic Arts Course.
Roland Hugh Kinder,	Arts and Science Course.
Richard Adams Knight,	Mechanic Arts Course.
Glenn Moore Loomis,	Mechanical Engineering Course.
Esther Gladys McKone,	Arts and Science Course.
Earl Roger Montgomery,	Arts and Science Course.
Walter Francis Parker,	Arts and Science Course.
Helen Waldron Plumer,	Arts and Science Course.
Nellie Guild Poland,	Arts and Science Course.
Lena Vernice Waldron,	Arts and Science Course.

1916.

Lloyd Ridley Brown,	Arts and Science Course.
George Wilbur Burke,	Chemical Engineering Course.
Perry Warren Burt,	Animal Husbandry and Dairying Course.
Genevieve Adrienne Jeannette Charbonneau,	Arts and Science Course.
Melissa Annis Cilley,	Arts and Science Course.
Alice Veva Coffin,	Home Economics Course.
Dura Prescott Crockett,	Animal Husbandry and Dairying Course.
Rosina Martha Diettrich,	Home Economics Course.
Mary Clementina Dole,	Arts and Science Course.
Florence Lillian Dudley,	Arts and Science Course.
Marion Grace Dudley,	Home Economics Course.
Stephen Webster Dyer,	Animal Husbandry and Dairying Course.
John Spalding Elliott,	General Agricultural Course.
Frank Drew Ellsworth,	General Agricultural Course.
Nettie Edith Austin Finley,	Arts and Science Course.
Helen Agnes Hallisey,	Arts and Science Course.
Leon Abbott Hawkins,	Horticultural Course.
Wesley Everett Howard, Jr.,	Animal Husbandry and Dairying Course.
Marion Ruth Jenness,	Arts and Science Course.
Stephen Guy Johnson,	Animal Husbandry and Dairying Course.
Flavia Locke Jones,	Arts and Science Course.
Everett Harmon Kelley,	Animal Husbandry and Dairying Course.
Michael Reilly McGreal,	Arts and Science Course.
Frederick Sanford Manter,	Arts and Science Course.
Marion Edwena Mitchell,	Arts and Science Course.

William Remick Partington,	Engineering Course.
Vincent Aubert Perkins,	Horticultural Course.
James Alson Purington,	Arts and Science Course.
Bernice Reed,	Arts and Science Course.
Lewis Byron Robinson,	General Agricultural Course.
Herbert Richard Runnals,	Animal Husbandry and Dairying Course.
Neil Abner Sargent,	Chemical Engineering Course.
Victor Haskell Smith,	Animal Husbandry and Dairying Course.
Joseph Albert Sullivan,	General Agricultural Course.
William Thorpe Tapley,	Horticultural Course.
Walter Ira Waite,	Arts and Science Course.
Carroll Charles Waldron,	Mechanic Arts Course.
Charles Adolph Weigel,	General Agricultural Course.
Nellie Lydia White,	Arts and Science Course.
Russell Stewart Yeaton,	Animal Husbandry and Dairying Course.

1917.

Goldie Basch,	Arts and Science Course.
Vance Whiting Batchelor,	Arts and Science Course.
Arthur Samuel Burleigh,	Electrical Engineering Course.
Louise Elizabeth Burpee,	Home Economics Course.
Marion Olive Chase,	Arts and Science Course.
Elmer Frank Cutts,	Engineering Course.
Henry W. Degnan,	Arts and Science Course.
William Allen Dudley,	Engineering Course.
Clifton Henry Dustin,	Mechanic Arts Course.
Alice Fernald,	Home Economics Course.
Isabel Jane Fernald,	Home Economics Course.
Philip Joseph Griffin,	Arts and Science Course.
Frances Dorotha Hatch,	Arts and Science Course.
Eleanor Hurst Lambert,	Arts and Science Course.
Arthur Richardson Morgan,	Agricultural Course.
Henrietta Carleton Nudd,	Home Economics Course.
Beatrice Reed,	Home Economics Course.
Hansell Arthur Russell,	Arts and Science Course.
Clarice Henrietta Shannon,	Home Economics Course.
Alberta Neal Steuerwald,	Home Economics Course.
Clark Leavitt Stevens,	Agricultural Course.
William Hervey Thomas,	Agricultural Course.
Edwin Albert Wiggin,	Mechanic Arts Course.

1918.

Willard Increase Allen, Jr.,	Arts and Science Course.
Harry Clifton Atkins,	Chemical Engineering Course.
Raymond Harvey Bagg,	Engineering Course.
John Arthur Baker,	Chemical Engineering Course.
Gladys Alice Brown,	Arts and Science Course.
Elenora Currier,	Home Economics Course.
Mary Olive Cushing,	Home Economics Course.
Heman Charles Fogg,	Chemical Engineering Course.
Mildred Margaretta Flynn,	Arts and Science Course.
Ruth Whitney Hadley,	Home Economics Course.
Florence Julia Harris,	Home Economics Course.
John Edwin Humiston,	Agricultural Course.
Weston Harvey Jeffers,	Agricultural Course.
Russell Cyprian Jones,	Arts and Science Course.
Merton Burgess Lane,	Chemical Engineering Course.
Elmer Nason Sanders,	Chemical Engineering Course.
Sam Loring Stearns,	Agricultural Course.
Ethel May Walker,	Home Economics Course.
Hazel Searles Winn,	Arts and Science Course.

PRIZE RECORD FOR 1915.

BAILEY PRIZE.

Given by Dr. C. H. Bailey, Class of '79 and E. A. Bailey, Class of '85.

Charles Wesley Davis, Concord.

ERSKINE MASON MEMORIAL PRIZE.

Walter Whittier Swett, Gossville.

CHASE-DAVIS MEMORIAL MEDALS.

Gold Medal.

John Fawdrey Thompson, Tilton.

Silver Medal.

Paul Edward Corriveau, Concord.

SENIORS STANDING HIGHEST IN MILITARY DEPARTMENT

Arnold J. Grant, Dover.
Richard A. Knight, Concord.

WINNERS OF INDIVIDUAL PRIZE DRILL.

Gold Medal.

Roy C. Graham, '17, Candia.

Silver Medal.

Ralph L. Dame, '18, Newport.

Bronze Medal.

William H. Thomas, '17, Franconia.

PRIZE SABRE—EXCELLENCE IN DRILL.

Dura P. Crockett, '16, New London.

SENIORS REPORTED TO ADJUTANT-GENERAL OF THE ARMY FOR APTITUDE IN MILITARY DEPARTMENT.

Arnold Jay Grant, Dover.
Richard A. Knight, Concord.
John F. Thompson, Tilton.

VALENTINE SMITH SCHOLARSHIPS.

Ralph Waldo Doeg, '16, Exeter.
Frances Dorotha Hatch, '17, Exeter.
Martha Luena Hoitt, '18, Durham.
Gladys Hoagland, '19, Stow, Mass.

ROSTER OF REGIMENT.

For 1915–16.

COMMANDANT.

First Lieutenant S. J. Sutherland, United States Infantry.

CADET OFFICERS AND NON-COMMISSIONED OFFICERS

FIELD AND STAFF.

Lieutenant-Colonel D. P. Crockett, *Commanding Regiment.*
Captain L. P. Philbrick, *Adjutant.*
Captain C. W. Archibald, *Quartermaster.*
Captain Joseph A. Sullivan, *Range Officer.*
Sergeant-Major H. W. Degnan.
Quartermaster-Sergeant E. S. Johnson.
Range Sergeant, B. H. Dwight.
Color Sergeant, J. H. Rollins.
Color Sergeant, H. R. Meserve.

FIRST BATTALION.

Major W. I. Waite, *Commanding Battalion.*
First Lieutenant G. D. Parnell, *Adjutant.*
Second Lieutenant O. C. Work, *Quartermaster.*

BAND.

First Lieutenant F. S. Manter.
Chief Musician P. S. Ward.
Principal Musician E. S. Ross.
Drum-Major N. J. Harriman.

Sergeants.

W. H. Hoyt.
A. R. Morgan.
W. H. O'Brien.

Corporals.

L. C. Swain.
H. B. Caswell.
P. R. Sinclair.
R. F. Cahalane.
C. H. Dustin.
F. I. Ordway.

COMPANY A.

Captain G. W. Burke, *Commanding Company.*
First Lieutenant K. C. Westover.
Second Lieutenant W. P. Knox.
First Sergeant H. A. Russell.

Sergeants.

W. A. Dudley.
F. W. Fitch.
N. E. Robinson.
E. B. Nichols.

Corporals.

H. F. Jenkins.
G. B. Glidden.
A. N. Graham.
L. W. Cooley.
C. W. Sleeper.
T. A. Barker.

COMPANY B.

Captain E. L. Blake, *Commanding Company.*
First Lieutenant V. W. Batchelor.
Second Lieutenant A. B. Whittemore.
First Sergeant E. F. Cutts.

Sergeants.

C. O. Austin.
S. J. Green.
E. L. Scovill.
R. J. Ewart.

Corporals.

H. Eastman.
E. A. Hughes.
W. A. Magrath.
G. A. Bassett.

COMPANY C.

Captain W. E. Howard, *Commanding Company.*
First Lieutenant R. C. Graham.
Second Lieutenant J. D. Colomy.
First Sergeant F. P. Bennett.

Sergeants.

E. N. Sanders.
W. H. Bennett.
P. B. Badger.
R. S. Jenkins.

Corporals.

L. E. Merrill.
G. M. Howe.
J. A. Morrill.
D. W. Libby.
G. N. Blatchford
L. Pope.

SECOND BATTALION.

Major C. S. Pettee, *Commanding Battalion.*
First Lieutenant P. W. Watson, *Adjutant.*
Second Lieutenant R. D. Brackett, *Quartermaster.*

COMPANY D.

Captain G. W. Chase, *Commanding Company.*
First Lieutenant W. H. Thomas.
Second Lieutenant S. W. Wentworth.
First Sergeant H. Willand.

Sergeants.

C. Cummings.
H. F. Swett.
P. A. Toothill.
C. W. Poland.

Corporals.

R. Callendar.
E. D. Joslyn.
W. H. Irvine.
P. B. Gay.
C. A. Gordon.

Musician.

C. Colby.

COMPANY E.

Captain W. T. Tapley, *Commanding Company.*
First Lieutenant R. C. Wiggin.
Second Lieutenant C. B. Tibbetts.
First Sergeant P. J. Griffin.

Sergeants.

J. A. Sussman.
J. B. Ford.
R. H. Sawyer.
M. B. Lane.

Corporals.

F. B. Cann.
C. A. Bennett.
C. B. Broderick.
S. H. Perley.
S. H. Dalton.
R. S. Morrill.

COMPANY F.

Captain W. J. Nelson, *Commanding Company.*
First Lieutenant C. C. Bond.
Second Lieutenant R. T. Roberts.
First Sergeant C. L. Stevens.

Sergeants.

R. L. Dame.
E. A. Wiggin.
L. A. Boutwell.
G. Martin.

Corporals.

J. E. Miltimore.
B. G. Butterfield.
H. C. Main.
R. P. Nevers.
J. E. Humiston.
W. H. Jeffers.

SIGNAL PLATOON.

First Sergeant.

J. E. Frisbee.

Corporals.

A. S. Burleigh.
R. L. Nelson.
R. E. Hodgdon.
T. R. Anderton.

STUDENTS, 1915–1916.

This directory, for the first time, contains the number of hours towarc graduation each student has credited to him on the records in the Registrar's Office. This list does not contain the hours earned from savec cuts for the first semester of the current year, but is supposed to be otherwise complete to March, 1916, including any make-up examinations reported to that time.

The course shows the department in which the student registerec for the second semester of this year, and under P. O. Address, his residence at time of registration last fall.

The abbreviations indicating the course stand for the following departments:

a. h. and *d.*—Animal Husbandry and Dairy course; *for.*—Forestry course; *hort.*—Horticultural course; *gen. a.*—General Agricultura course; *agi.*—Freshmen and Sophomores in the Agricultural course; *c e.*—Chemical Engineering; *m. e.*—Mechanical Engineering course; *e e.*—Electrical Engineering course; *a.* and *s.*—General Arts and Scienc course; *h. e.*—Home Economics course; *m. a. t.*—Mechanic Arts course

GRADUATES.

Name.	Course.	P. O. Address.
Bean, Raymond J.	*a.* and *s.*	*Laconia.*
Grant, Arnold J.	*c. e.*	*Dover.*
Nash, Marion E.	*a.* and *s.*	*Dover.*
Smith, Todd Orin	*agi.*	*Durham.*
Young, Harry P.	*agi.*	*Durham.*

SENIORS.

Name.	Hours' Credit.	Course.	P. O. Address.
Barr, William H.,	132½	*e. e.*	*So. Natick, Mass.*
Blake, Eston Lloyd,	108	*a. h.* and *d.*	*Durham.*
Brown, Harold Sunderlin,	117	*a.* and *s.*	*Manchester.*
Brown, Lloyd Ridley,	136	*a.* and *s.*	*Concord.*
Bugbee, Ralph Josiah,	132	*a. h.* and *d.*	*Claremont.*
Burke, George Wilbur,	131½	*c. e.*	*Concord.*
Burt, Perry Warren,	132	*a. h.* and *d.*	*Westmoreland.*
Chamberlain, Walter Edwin,	125	*gen. a.*	*So. Natick, Mass.*
Charbonneau, Genevieve A. J.,	121	*a.* and *s.*	*Nashua.*
Chase, Guy Wetherbee,	127	*m. a. t.*	*Londonderry.*
Cilley, Melissa Annie,	119	*a.* and *s.*	*Colebrook.*
Coffin, Alice Veva,	123	*h. e.*	*Boscawen.*
Crockett, Dura Prescott,	140	*a. h.* and *d.*	*New London.*

Name.	Hours' Credit.	Course.	P. O. Adnress.
lettrich, Rosina Martha,	129	*h. e.*	*Boston, Mass.*
beg, Ralph Waldo,	141½	*e. e.*	*Exeter.*
ble, Mary Clementine,	119	*a.* and *s.*	*Enfield.*
ndley, Florence Lillian,	123	*a.* and *s.*	*Reeds Ferry.*
ndley, Marion Grace,	129	*h. e.*	*Newmarket.*
lvight, Bernard Henry,	123	*a.* and *s.*	*Manchester.*
ler, Stephen Webster,	133	*a. h.* and *d.*	*Lawrence, Mass.*
llsworth, Frank Drew,	129	*gen. a.*	*Pembroke.*
nley, Nettie Edith Austin,	122	*a.* and *s.*	*Dover.*
nders, Mildred Maleham,	118	*a.* and *s.*	*Rochester.*
ller, Edward Deering,	125½	*c. e.*	*Atkinson.*
adley, John Corbin,	131	*gen. a.*	*Durham.*
llisey, Helen Agnes,	120	*a.* and *s.*	*Nashua.*
awkins, Leon Abbott,	130	*hort.*	*Plymouth.*
ayes, Robert Foss,	136½	*e. e.*	*Dover.*
bward, Wesley Everett, Jr.,	142	*a. h.* and *d.*	*Belmont.*
ird, Norman Cannavan,	141½	*e. e.*	*Dover.*
nness, Marion Rutt,	122	*a.* and *s.*	*Dover.*
hnson, Stephen Guy,	138	*a. h.* and *d.*	*Winchester.*
nes, Flavia Locke,	128	*a.* and *s.*	*Exeter.*
lley, Everette Harmon,	136	*a. h.* and *d.*	*Barnstead.*
ry, John Dana,	123	*a.* and *s.*	*Berlin.*
cCartney, Robert Irving,	117½	*a.* and *s.*	*Kingston.*
cDuffee, Edward Clarence,	130½	*e. e.*	*Claremont.*
cGreal, Michael Riley,	128	*a.* and *s.*	*Somersworth.*
ack, Lillian Wallace,	111	*h. e.*	*Derry.*
anter, Fred Sanford,	120½	*a.* and *s.*	*Manchester.*
azmanian, Misak Minas,	139	*gen. a.*	*Huseynig, Armenia.*
itchell, Marion Edevena,	119	*a.* and *s.*	*Newmarket.*
orse, Stephen Noyes,	123½	*m. e.*	*Ashland.*
elson, George Albert,	117	*a.* and *s.*	*Exeter.*
elson, Westly Joseph,	139	*a. h.* and *d.*	*Manchester.*
rtington, William R.,	137½	*e. e.*	*Portsmouth.*
nnell, Philip Harlan,	125½	*a.* and *s.*	*Suncook.*
rkins, Vincent Aubert,	134	*hort.*	*Claremont.*
ttee, Charles Swett,	125	*a.* and *s.*	*Durham.*
ilbrick, Leonard Parker,	96½	*a.* and *s.*	*No. Hampton.*
rrington, James Alson,	119	*a.* and *s.*	*Hopkinton.*
eed, Bernice,	122	*a.* and *s.*	*Claremont.*
bbinson, Lewis Byron,	135½	*gen. a.*	*Concord, R. F. D.*
nnals, Herbert Richard,	137	*a. h.* and *d.*	*West Lebanon.*
nborn, Eldred Louis,	135	*m. a t.*	*Lochmere.*
rgent, Neil Abner,	134½	*c. e.*	*Concord.*
wyer, Kenneth Earl,	136½	*e. e.*	*Manchester.*

Name.	Hours' Credit.	Course.	P. O. Address.
Smith, Albert Eaton,	130½	*a. h.* and *d.*	*Hudson.*
Smith, Robert Carl,	116	*a.* and *s.*	*Exeter.*
Smith, Victor Haskell,	133	*a. h.* and *d.*	*Hudson.*
Steele, Harold Arthur,	114	*a.* and *s.*	*Manchester.*
Studd, George Thomas,	145½	*e. e.*	*Berlin.*
Sullivan, Joseph Albert,	123½	*gen. a.*	*Dover.*
Swain, Howard Eugene,	116½	*m. e.*	*Exeter.*
Swett, Earle Frederick,	119	*a.* and *s.*	*Andover.*
Tapley, William Thorpe,	131	*hort.*	*Revere, Mass.*
Torrey, Robert Jordan,	121	*a.* and *s.*	*East Putnam, Conn.*
Waite, Walter I.,	128½	*a.* and *s.*	*Concord.*
Waldron, Carroll Charles,	126	*m. a. t.*	*Center Strafford.*
Waldron, Etta Seaward,	121	*h. e.*	*Center Strafford.*
Ward, Paul Stanwood,	120	*a.* and *s.*	*Milford.*
Watson, Philip Wilder,	103½	*m. a. t.*	*Dover.*
Weigel, Charles Adolph,	147	*gen. a.*	*Lawrence.*
White, Nellie Lydia,	120	*a.* and *s.*	*Enfield.*
Willand, Pitt Sawyer,	148½	*c. e.*	*Dover.*
Work, Olin Charles,	119	*m. a. t.*	*Exeter.*

JUNIORS.

Anderton, Thomas Richard,	82	*e. e.*	*Dover.*
Archibald, Clyde Warren,	113	*e. e.*	*Portsmouth.*
Basch, Goldie,	89	*a.* and *s.*	*Ashuelot.*
Batchelor, Vance Whiting,	88	*a.* and *s.*	*Durham.*
Bennett, Frank Powers,	94	*c. e.*	*Northwood.*
Blanchard, Phyllis Mary,	89	*a.* and *s.*	*Epping.*
Bond, Charles Chester,	77	*a.* and *s.*	*Lisbon.*
Boutwell, Leroy Arthur,	75	*m. e.*	*Concord.*
Brown, Gladys Alice,	79	*a.* and *s.*	*Franklin.*
Brown, Oscar Choate,	146½	*c. e.*	*Lebanon.*
Burleigh, Arthur Samuel,	93	*e. e.*	*Ossipee.*
Burpee, Louise Elizabeth,	88	*h. e.*	*Manchester.*
Carlisle, Sumner,	79	*a. h.* and *d.*	*Exeter.*
Caswell, Henry Benson,	76	*m. a t.*	*Barnstead.*
Chase, Marion Olive,	89	*a.* and *s.*	*Seabrook.*
Clark, Malcolm Barrett,	77	*a.* and *s.*	*Bethlehem.*
Colby, Rachel Clarenda,	80	*h. e.*	*New Boston.*
Colomy, James Daniel,	92	*for.*	*Durham.*
Cooley, Leon Weston,	88½	*m. a. t.*	*Dana, Mass.*
Crouch, Leon Meader,	99½	*a.* and *s.*	*Durham.*
Cutts, Elmer Frank,	92	*e. e.*	*Manchester.*
Davis, Leland Worthen,	122½	*e. e.*	*Concord.*

Name.	Hours' Credit.	Course.	P. O. Address.
Degnan, Henry William,	90	*a.* and *s.*	*Nashua.*
Dudley, William Allen,	92	*e. e.*	*Colebrook.*
Dustin, Clifton Henry,	94	*m. a. t.*	*Rochester.*
Evans, George Everett,	82	*for.*	*East Kingston.*
Ewer, Natalie Drew,	89	*a.* and *s.*	*Dover.*
Fall, Beatrice Louise,	82	*a.* and *s.*	*Dover.*
Fernald, Alice,	81	*h. e.*	*Dover.*
Fernald, Isabel Jane,	86	*h. e.*	*Dover.*
Fitch, Frank Williams,	92	*a. h.* and *d.*	*Windsor, Vt.*
Frisbee, Joseph Elliot,	92	*e. e.*	*Portsmouth.*
Gilmore, Ralph Harold,	78	*m. a t.*	*Concord.*
Glidden, Chester Willis,	94	*a. h.* and *d.*	*Alton Bay.*
Graham, Roy Charles L.,	96	*a.* and *s.*	*Candia.*
Griffin, Philip Joseph,	111	*a.* and *s.*	*Portsmouth.*
Hardy, Verna Carola,	88	*a.* and *s.*	*Concord.*
Harriman, Nathaniel Joy,	85	*a.* and *s.*	*Laconia.*
Hatch, Frances Dorotha,	90	*a.* and *s.*	*Exeter.*
Hayden, Philip Alden,	103	*a. h.* and *d.*	*Brookline.*
Hodgdon, Robert Edgar,	93	*e. e.*	*Rochester.*
Hoyt, Willis Hadley,	98	*a. h.* and *d.*	*Newington.*
Hussey, Ruth Janet,	78	*a.* and *s.*	*Rochester.*
Jenkins, Harvey Foss,	91	*gen. a.*	*Manchester.*
Johnson, Ellsworth,	89	*hort.*	*Springfield, Vt.*
Johnson, Myrtle May,	83	*a.* and *s.*	*Reed's Ferry.*
Kidder, Harold Soule,	124½	*e. e.*	*Dover.*
Knox, Warren Penn,	89	*gen. a.*	*Dover.*
Lake, Leroy Moses,	96	*a. h.* and *d.*	*Brentwood.*
Lambert, Eleanor Hurst,	86	*a.* and *s.*	*Kittery Point, Me.*
Langley, Mary Anthony,	72	*h. e.*	*Durham.*
Little, Harold Benjamin,	98	*hort.*	*Colebrook.*
Lombard, Carl Weston,	92	*m. a. t.*	*Newburyport, Mass.*
Long, Edward,	80	*for.*	*Dover.*
Lord, Eugene Hodgdon,	81	*m. a. t.*	*Hopkinton.*
Meserve, Harlan Ray,	78	*a.* and *s.*	*Rochester.*
Morey, Isabel Marie,	84	*h. e.*	*Andover.*
Morgan, Arthur Richardson,	94	*a. h.* and *d.*	*Durham.*
Nelson, Rufus Lawrence,	91	*e. e.*	*Tilton.*
Nichols, Earl Brazil,	96	*a. h.* and *d.*	*Newton.*
Nixon, Leonard Russell,	93	*a. h.* and *d.*	*Exeter.*
Nudd, Henrietta Carleton,	90	*h. e.*	*Hampton.*
O'Brien, William Henry,	72	*e. e.*	*Walpole.*
Parker, Ralph Hartham,	97½	*a.* and *s.*	*Kingston.*
Parnell, George Downes,	90	*e. e.*	*Manchester.*
Reed, Beatrice,	86	*h. e.*	*Claremont.*

Name.	Hours' Credit.	Course.	P. O. Address.
Roberts, Julia Aurelia,	87	*h. e.*	*Toledo, Ohio.*
Roberts, Ray Towle,	90	*e. e.*	*West Concord.*
Robinson, Nathaniel Edwin,	88	*m. a. t.*	*Concord.*
Rollins, John Hooper,	87	*c. e.*	*Dover.*
Ross, Edgar Samuel,	85	*c. e.*	*Nashua.*
Russell, Hansel Arthur,	99	*a.* and *s.*	*Lebanon.*
Scruton, Herbert Ambrose,	99½	*a.* and *s.*	*Dover.*
Shannon, Clarice Henrietta,	88	*h. e.*	*Laconia.*
Steuerwald, Alberta Neal,	88	*h. e.*	*Dover.*
Stevens, Clark Leavitt,	92	*for.*	*Colebrook.*
Sussman, Joseph Abraham,	90	*a.* and *s.*	*Portsmouth.*
Thomas, William Hervey,	96	*gen. a.*	*Durham.*
Tibbetts, Carleton Briggs,	88	*c. e.*	*Somersworth.*
Tilton, Helen Florence,	82	*a.* and *s.*	*Auburn.*
Turcotte, Abby Jewett,	83	*h. e.*	*Lakeport.*
Wagner, Edward Richard,	84	*c. e.*	*Manchester.*
Wentworth, Sidney Warren,	85	*hort.*	*Hollis.*
Weston, Fred Webster,	79	*a.* and *s.*	*Lisbon.*
Weston, Helen Brown,	89	*h. e.*	*Lisbon.*
Westover, Kyle Chester,	93	*hort.*	*Manchester.*
Whittemore, Arthur B.,	.82	*gen. a.*	*Colebrook.*
Wiggin, Edwin Albert,	86	*m. a. t.*	*Exeter.*
Wiggin, Rohl Chase,	86	*a.* and *s.*	*Concord.*
Worcester, Mary Abbie,	87	*h. e.*	*Berwick.*

SOPHOMORES.

Abbott, James Hamilton,	40	*m. a. t.*	*Derry.*
Allen, Willard Increase, Jr.,	52	*a.* and *s.*	*Bridgeport, Conn.*
Atkins, Harry Clifton,	54	*c. e.*	*Franklin.*
Austin, Charles Oakley,	56	*agi.*	*Laconia.*
Bachelder, Henry Putney,	55	*agi.*	*East Andover.*
Badger, Phillips Brooks,	57	*agi.*	*Portsmouth.*
Bagg, Raymond Harvey,	56	*e. e.*	*West Springfield, Mass*
Baker, John Arthur,	52	*c. e.*	*Claremont.*
Barker, Forrest Allen,	36	*e. e.*	*Nashua.*
Bartlett, Richard Cilley,	48	*e. e.*	*Derry Village.*
Batchelder, Philip,	55	*a.* and *s.*	*Durham.*
Bell, Ernest Lorne,	43	*a.* and *s.*	*Plymouth.*
Bennett, Charles Alfred,	59	*a.* and *s.*	*Wakefield.*
Bennett, William Henry,	44	*a.* and *s.*	*Lowell, Mass.*
Benson, Maurice Haynes,	44	*agi.*	*Lebanon.*
Blatchford, George Nason,	54	*a.* and *s.*	*Hampton Falls.*
Brackett, Ralph de R.,	61	*agi.*	*Greenland.*

Name.	Hours' Credit.	Course.	P. O. Address.
Bragdon, Doris Lillian,	52	*h. e.*	*Exeter.*
Brill, Milo Horace,	48	*a.* and *s.*	*Newport.*
Broderick, Charles Bernard,	53	*agi.*	*Exeter.*
Bugbee, Helen Marion,	50	*a.* and *s.*	*Claremont.*
Burckel, Arthur Walter,	41	*c. e.*	*Lawrence, Mass.*
Butterfield, Byron G.,	52	*agi.*	*Antrim.*
Byron, Rachael Agnes,	22	*a.* and *s.*	*Newport.*
Cahalane, Reginald Foster,	50	*a.* and *s.*	*Stamford, Conn.*
Came, Carleton Lord,	53	*c. e.*	*Somersworth.*
Cann, Frederick Bowman,	46	*e. e.*	*Jaffrey.*
Center, Mary Elizabeth,	34	*h. e.*	*Hudson.*
Clarke, Hazel Mae,	39	*h. e.*	*Manchester.*
Clarke, Hugh Trescott,	46	*a.* and *s.*	*Canaan.*
Coburn, Charles Higgins,	57	*agi.*	*Tyngsboro, Mass.*
Coburn, Rodney Clyde,	53	*c. e.*	*Lowell, Mass.*
Cummings, Charles,	71	*agi.*	*Colebrook.*
Currier, Elenora,	51	*h. e.*	*Lochmere.*
Cushing, Mary Olive,	53	*h. e.*	*Concord.*
Dalton, Stanley Hatch,	52	*agi.*	*Nashua.*
Dame, Ralph Leighton,	41	*agi.*	*Newport.*
Densmore, John Francis,	48	*a.* and *s.*	*Hanover.*
Dodge, James William,	56	*e. e.*	*Contoocook.*
Dreller, Louis,	54	*e. e.*	*Portsmouth.*
Durgin, Charles B.,	52	*c. e.*	*Wilton.*
Durgin, John Frank,	49	*agi.*	*Newmarket.*
Eastman, Eva Emma,	52	*a.* and *s.*	*Concord.*
Flynn, Mildred Margaretta,	54	*a.* and *s.*	*Dover.*
Fogg, Herman Charles,	55	*c. e.*	*Concord.*
Ford, Joseph Basil,	50	*agi.*	*Milford.*
Foss, Edith Emily,	57	*a.* and *s.*	*Dover.*
Furber, Josephine M.,	53	*h. e.*	*Laconia.*
Garland, Otis Raymond,	56	*agi.*	*Hampton.*
George, Maurice Channing,	55	*m. e.*	*Danville.*
Goodrich, Wendell Eugene,	54	*e. e.*	*Hanover.*
Gove, Lucile Adeline,	46	*a.* and *s.*	*North Danville.*
Graham, Alfred Newman,	52	*a.* and *s.*	*Henniker.*
Graham, Clifford L.,	34	*agi.*	*Epping.*
Griswold, James Herbert,	56	*agi.*	*Springfield, Vt.*
Hadley, Ruth Whitney,	51	*h. e.*	*Durham.*
Hall, Fred William,	46	*agi.*	*Center Strafford.*
Hardy, Ernest Winfield,	50	*agi.*	*Contoocook.*
Harris, Florence Julia,	52	*h. e.*	*Laconia.*
Hewey, Hilbert Goodrich, Jr.,	54	*a.* and *s*	*Lewiston, Me.*
Hoitt, Martha Luena,	55	*h. e.*	*Durham.*

Name.	Hours' Credit.	Course.	P. O. Address.
Howe, Fred John,	42	*a.* and *s.*	*Exeter.*
Howe, George Merrill,	42	*a.* and *s.*	*Contoocook.*
Humiston, John Edwin,	56	*agi.*	*Hanover Center.*
Hunting, Ronald Walter,	33	*e. e.*	*Newport.*
Huse, Irene Meyers,	54	*a.* and *s.*	*Laconia.*
Huse, Raymond Warren,	54	*agi.*	*Manchester.*
Hutchinson, Perne Rawson,	72	*agi.*	*Berlin.*
Hutchinson, Raymond Walch,	57	*agi.*	*Reed's Ferry.*
Hyde, Lincoln Spencer,	46	*agi.*	*East Kingston.*
Ingerson, Della May,	45	*h. e.*	*Starrking.*
Irvine, Howard Thompson,	53	*agi.*	*Exeter.*
Jeffers, Weston Harvey,	63	*agi.*	*Pike.*
Jenkins, Rodney Solon,	52	*agi.*	*Loudon.*
Jones, Russell Cyprian,	56	*a.* and *s.*	*Exeter.*
King, Elsie Louise,	52	*h. e.*	*Dover.*
Lane, Merton Burgess,	55	*c. e.*	*Ashburnham, Mass.*
Lary, Erma Masso,	46	*a.* and *s.*	*Berlin.*
Libby, Donald Whitney,	40	*agi.*	*Dover.*
Lynde, Leslie Eugene,	59	*e. e.*	*Dover.*
McConachie, Max,	55	*e. e.*	*Manchester.*
Martin, Giles,	44	*c. e.*	*Manchester.*
Merrill, Lester Edwin,	45	*agi.*	*Lebanon.*
Merrill, Marguerite Mae,	52	*a.* and *s.*	*Nashua.*
Miltimore, John Everett,	54	*agi.*	*Derry.*
Moore, Leroy Stearns,	36	*m. a. t.*	*Exeter.*
Morrill, Joseph Warren,	56	*agi.*	*Grafton.*
Morrill, Raymond Soule,	56	*a.* and *s.*	*Warren.*
Nevers, Ralph Poor,	41	*c. e.*	*Salem, Mass.*
Ordway, Frederick Ira, Jr.,	40	*a.* and *s.*	*Manchester.*
Osbourn, Carver Haines,	40	*a.* and *s.*	*West Dennis, Mass.*
Parsons, John Joseph,	53	*a.* and *s.*	*Somersworth.*
Perley, Sidney Harold,	44	*agi.*	*Durham.*
Pope, Lemuel,	37	*m. e.*	*Portsmouth.*
Richardson, Clesson W.,	47	*a.* and *s.*	*Marlborough.*
Sanders, Elmer Nason,	56	*c. e.*	*Durham.*
Sawyer, Lester Little,	42	*a.* and *s.*	*Durham.*
Sawyer, Robert Hamilton,	60	*agi.*	*Bradford, Mass.*
Scovell, Earl Louis,	53	*agi.*	*Haverhill, Mass.*
Sinclair, Philip Raymond,	38¾	*c. e.*	*Ossipee.*
Sleeper, Clarence Wilson,	56	*a.* and *s.*	*Concord.*
Spencer, Archie M.,	54	*m. e.*	*Plymouth.*
Stearns, Sam Loring,	57	*agi.*	*Manchester.*
Stimson, Robert Chapman,	56	*c. e.*	*New London.*
Stuart, Joseph Warren,	45	*m. a. t.*	*Cumberland Mills, M*

Name.	Hours' Credit.	Course.	P. O. Address.
Swain, Lewis Churchill,	52	*agi.*	*Exeter.*
Wadleigh, Clarence B.,	56	*agi.*	*Newton Junction.*
Walker, Ethel May,	52	*h. e.*	*Concord.*
Waterman, Clarence S.,	58½	*agi.*	*Durham.*
Wentworth, Rollins,	55	*e. e.*	*Dover.*
Whippen, Norman Francis,	56	*agi.*	*Kingston.*
Willand, Howard,	63	*agi.*	*No. Wolfeboro.*
Winn, Hazel Searle,	54	*a.* and *s.*	*Dover.*
Young, Claiborne Hart,	56	*agi.*	*Wilton.*

FRESHMEN.

Hours of credit are not computed for students unable, for various reasons, to complete the semester.

Adams, Albert Warner,	17	*a.* and *s.*	*Alton.*
Adams, Forrest Eugene,	15	*m. a. t.*	*Westbrook, Me.*
Amor, John Adams,	9	*m. e.*	*Penacook.*
Ashford, Olive Irene,	8	*h. e.*	*Antrim.*
Atwood, Grace Etta,	12	*a.* and *s.*	*Worcester, Mass.*
Baker, Margaret Edna,	17	*h. e.*	*Littleton.*
Bartlett, Edward Emery,	16	*e. e.*	*Derry.*
Bellows, Charles Byron,		*e. e.*	*Groveton.*
Belyea, Clement Chipman,	16	*c. e.*	*Newfields.*
Benson, Priscilla,	11	*h. e.*	*Lebanon.*
Blodgett, Frank Hoben,	17	*c. e.*	*Concord.*
Boomer, Stephen Henry,	12	*agi.*	*Cumberland Mills, Me.*
Brosnan, John Andrew,	18	*agi.*	*Thorndike, Mass.*
Brown, Charles Edward,	11	*a.* and *s.*	*Dover.*
Brown, Irving Charles,	18	*a.* and *s.*	*Franklin.*
Brown, Lawrence William,		*agi.*	*Strafford.*
Buckley, John Edward,	16	*e. e.*	*Nashua.*
Bullard, Harold Fred,		*a.* and *s.*	*Manchester.*
Burbank, Paul William,	10	*a.* and *s.*	*Berlin.*
Callender, Benjamin R.,	18	*agi.*	*Whitefield.*
Carpenter, Esther Leavitt,	17	*a.* and *s.*	*Newmarket.*
Carr, James Irvin,	18	*c. e.*	*Hancock.*
Chamberlain, Muriel,	17	*a.* and *s.*	*Bethlehem.*
Clapp, Arthur Everett,	18	*a.* and *s.*	*Portsmouth.*
Cochrane, Thomas Joseph,	18	*c. e.*	*Ludlow, Mass.*
Coggin, Guy Albert,	12	*a.* and *s.*	*Mont Vernon.*
Cohen, Lewis Albert,	17	*a.* and *s.*	*Nashua.*
Colby, Oliver Messer,	12	*a.* and *s.*	*Lakeport.*
Conley, James Joseph,		*c. e.*	*Somersworth.*
Cressey, Mary Robinson,	18	*a.* and *s.*	*Dover.*

Name.	Hours' Credit.	Course.	P. O. Address.
Cullinan, John Francis,	18	*m. e.*	*Portsmouth.*
Dimond, Blanche Farnum,	17	*h. e.*	*Concord.*
Doherty, Mildred Eva,	11	*h. e.*	*Derry.*
Dresser, Jacob William,	15	*agi.*	*Berlin.*
Dudley, Dorris,	15	*a.* and *s.*	*Reed's Ferry.*
Dustin, Cecil Calvert,	18	*agi.*	*Rochester.*
Edwards, Laurene M.,	11	*h. e.*	*Franklin.*
Emery, Henry Alfred,	12	*e. e.*	*Auburn.*
Ewart, Raymond James,	21	*agi.*	*No. Andover, Mass.*
Ewer, Everett Donald,		*a.* and *s.*	*Dover.*
Farnham, Roger Eugene,	6	*agi.*	*Somerville, Mass.*
Fenderson, Kendrick Elwell,	8	*a.* and *s.*	*Dover.*
Foster, Harold Sinclair,		*e. e.*	*Bath.*
Foster, Mabel Lydia,	14	*h. e.*	*Claremont.*
Fuller, Fred Bennell,	16	*a.* and *s.*	*Jefferson.*
Gale, Joseph Morrill,	15	*agi.*	*Concord.*
Garland, Oscar Leavitt,	15	*m. e.*	*Hampton.*
Giles, Arthur Cyrus,		*agi.*	*Northwood.*
Glidden, N. Frank,	15	*agi.*	*Alton Bay.*
Gordon, George Carleton,		*agi.*	*Haverhill.*
Goss, Louis Stillman,	15	*c. e.*	*Lakeport.*
Gray, Walter Benson,	16	*e. e.*	*Rochester.*
Greenfield, Sara Ella,	8	*a.* and *s.*	*Rochester.*
Hale, Dorothy Adeline,	17	*a.* and *s.*	*Dover.*
Hall, Irene Marguerite,	14	*a.* and *s.*	*Rochester.*
Hanson, Dorothy,	17	*a.* and *s.*	*Franklin.*
Harvell, Ralph Burbank,	18	*agi.*	*Laconia.*
Haseltine, Franklin Lowell,	40	*agi.*	*Reed's Ferry.*
Hatch, Horace McNeil,		*agi.*	*Lebanon.*
Henchman, Russell Bunce,	18	*e. e.*	*East Jaffrey.*
Hickey, John Rodden,		*a.* and *s.*	*East Rochester.*
Higgins, Nelson Daniel,	13	*m. e.*	*Littleton.*
Hilliard, William Russell,	18	*agi.*	*East Kingston.*
Hoagland, Gladys,	29	*a.* and *s.*	*Stow, Mass.*
Hobbs, Earle Osborne,		*c. e.*	*Hallowell, Me.*
Hoffman, Frances Armstrong,	9	*a.* and *s.*	*Orange, N. J.*
Hoffman, Louis Benjamin,	16	*e. e.*	*Manchester.*
Horne, Chester Arthur,	18	*a.* and *s.*	*Rochester.*
Howard, Maurice Wilbur,	17	*a.* and *s.*	*Lebanon.*
Hunt, Cyril Thomas,	18	*c. e.*	*Cornish Flat.*
Hyde, Margaret Warren,	17	*h. e.*	*North Salem.*
Johnson, Ethel Pearl,		*h. e.*	*North Stratford.*
Johnson, Maurice Harold,	16	*e. e.*	*Manchester.*
Joy, Frank Adin,	18	*m. e.*	*Newfields.*

Name.	Hours' Credit.	Course.	P. O. Address.
elleher, Mary Ethel,	17	*a.* and *s.*	*Dover.*
emp, Alice Bowdoin,	17	*h. e.*	*Kingston.*
ight, Harold Carleton,	17	*a.* and *s.*	*East Jaffrey.*
nders, Chester Bertrand,	8	*c. e.*	*Derry Village.*
adry, Timothy,	11	*m. a. t.*	*Ludlow, Mass.*
ngley, Ada Caroline,	17	*a.* and *s.*	*Durham.*
wson, Reuben Albert,	15	*agi.*	*Ashuelot.*
wis, Marion Anna,	17	*h. e.*	*Littleton.*
vejoy, Ralph Locke,	16	*c. e.*	*Hollis.*
cCarty, Mary Elizabeth,	18	*a.* and *s.*	*Dover.*
acDonald, Ray Archibald,	9	*e. e.*	*Manchester.*
cKenney, Alfred Edwin,	12	*m. e.*	*Westbrook, Me.*
arshall, Barton Raymond,	11	*e. e.*	*Groveton.*
artin, Leighton Linwood,	18	*a.* and *s.*	*White Rock, Me.*
atthes, Carl Frederick,	19	*c. e.*	*Lawrence, Mass.*
eader, Raymond Brackett,	16	*e. e.*	*Rochester.*
itchell, Richard A.,	14	*a.* and *s.*	*Epping.*
oody, Alden Howard,	19	*c. e.*	*Concord.*
ooney, Trevor,	8	*a.* and *s.*	*Littleton.*
organ, Delia Abbie,		*h. e.*	*Hebron.*
organ, Lulu Denelda,		*h. e.*	*Hebron.*
orrison, Lewis Willard,	14	*a.* and *s.*	*Berlin.*
ightingale, Gordon T.,	15	*agi.*	*Strafford.*
oel, Edward Theodore,	10	*m. e.*	*Penacook.*
oyes, David Drew,	4	*agi.*	*Colebrook.*
udd, Willard Eugene,	18	*m. e.*	*Hampton.*
sborne, Charles Roland,	12	*a.* and *s.*	*Pittsfield.*
wen, Wilfrid Lester,	15	*agi.*	*Colebrook.*
ge, Oral Allen,	18	*agi.*	*Newton.*
ul, Leslie Mathews,	17	*a.* and *s.*	*Dover.*
rkins, Caroline May,	14	*a.* and *s.*	*Claremont.*
rron, Herbert Vincent,	13	*e. e.*	*Goffs Falls.*
ikham, Madeline Lona,	17	*h. e.*	*Dover.*
ace, Palmer Bruce,	33	*c. e.*	*Newmarket.*
ummer, Dwight Hall,		*a.* and *s.*	*Milton.*
oland, Mary Flora,	16	*a.* and *s.*	*Lebanon.*
atts, Oscar Boynton,		*agi.*	*Center Strafford.*
ott, Frank Williams,	18	*a.* and *s.*	*Pittsfield.*
ardall, Christine Flora,	17	*a.* and *s.*	*Campton.*
eardon, John Joseph,	16	*m. a. t.*	*Concord.*
ector, Gordon,	14	*a.* and *s.*	*Pawtucket, R. I.*
evene, Marcus Royal,	15	*a.* and *s.*	*Wheelright, Mass.*
ichmond, Louise Mary,	18	*a.* and *s.*	*Dover.*
obb, Bernice Aurilla,	17	*h. e.*	*Durham.*

Name.	Hours' Credit.	Course.	P. O. Address.
Robinson, Joseph Howard,	18	*m. e.*	*Pembroke,*
Rogers, Walter Eugene,	6	*a.* and *s.*	*Sanbornville.*
Rowe, Gilman Shaw,	14	*agi.*	*Exeter.*
Rowell, Harry Ellsworth,		*agi.*	*Lancaster.*
Rumrill, Hamilton,	18	*m. a. t.*	*Hillsborough.*
Russ, Clarence Kendall,		*m. e.*	*Hopkinton.*
Sanders, Miriam Augusta,	17	*h. e.*	*Granite.*
Seawards, Susie Ethel,	17	*h. e.*	*Dover.*
Sewall, Frank Albert,		*e. e.*	*Newmarket.*
Shedd, Hazelle Maud,	17	*h. e.*	*Rochester.*
Shillaber, John James,	16	*m. e.*	*Portsmouth.*
Shirley, Ralph Wellington,	18	*agi.*	*Fryeburg, Me.*
Shuttleworth, Melba J.,	17	*a.* and *s.*	*West Springfield, Ma*
Shuttleworth, William E.,	18	*agi.*	*Portsmouth.*
Simpson, Earl Edward,		*e. e.*	*Littleton.*
Smith, Gertrude May,	16	*h. e.*	*Newfields.*
Smith, Howard Bruce,	15	*e. e.*	*Newport.*
Smith, Ivan Robinson,	12	*agi.*	*Hudson.*
Soper, Otis Edmund,	15	*e. e.*	*Nashua.*
Spencer, Franklin Hiram,	16	*e. e.*	*Cumberland Mills, M*
Stafford, Henry Walton,	15	*e. e.*	*Berlin.*
Stafford, John Fremont,	11	*a.* and *s.*	*Berlin.*
Steeves, Lawrence Eugene,	15	*agi.*	*Strafford.*
Stevens, Ruth Lee,	17	*h. e.*	*Franconia.*
Strain, Murray Hartshorn,	15	*e. e.*	*Groveton.*
Sutherland, Christine Jane,	17	*h. e.*	*Plymouth.*
Tanzi, Ernest Carlos,		*c. e.*	*Hanover.*
Thompson, Charles Crawford,	18	*m. e.*	*Atkinson.*
Thompson, William Haven, Jr.,	16	*c. e.*	*Atkinson.*
Tilton, Lewis Blake,	15	*agi.*	*East Kingston.*
Torrey, Prescott Hawes,	12	*agi.*	*Quincy, Mass.*
Trubey, Cyril Conrad,	18	*agi.*	*No. Chelmsford, Mas*
Wakefield, Clement Arthur,	18	*e. e.*	*Biddeford, Me.*
Wallace, Stephen R. A.,		*a.* and *s.*	*Newmarket.*
Welch, Mary Louise,		*a.* and *s.*	*Newport.*
Wetherbee, Emma Louise,	17	*h. e.*	*Milford.*
Wheeler, William Crawford,	15	*agi.*	*Starrking.*
White, Alpheus Britton,	17	*a.* and *s.*	*Peterborough.*
Wiggin, Ida Marion,	17	*h. e.*	*Dover.*
Wildes, Karl Leland,	18	*e. e.*	*Belmont.*
Williams, Katherine,	17	*h. e.*	*Exeter.*
Wood, Margaret Aline,	14	*a.* and *s.*	*Haverhill.*
Young, Mabel Culver,		*h. e.*	*Portsmouth.*
Young, Roland Jesse,	12	*a.* and *s.*	*Berlin.*

SPECIALS.

Name.	Hours' Credit.	Course.	P. O. Address.
ssell, Ralph H.,	86½	*m. a. t.*	*Keene.*
omer, Marjory Ramsdell,	10	*a.* and *s.*	*Dover.*
ggin, William Symmes,		*agi.*	*Salem, Mass.*
vis, Otto Winfred,	18	*agi.*	*Concord.*
uld, John Harold,		*agi.*	*Union.*
ay, Ernest Lenwood,		*c. e.*	*So. Berwick, Me.*
nes, Paul Taggart,		*agi.*	*Tilton, Mass.*
rgas, Dionysios D.,	18	*e. e.*	*Dover.*
cGregor, Herbert Lynn,	12	*e. e.*	*Haverhill, Mass.*
ain, Harold Crawford,	54	*a.* and *s.*	*Dover.*
ul, George Boss,		*a.* and *s.*	*Dover.*
ssell, Frances Elizabeth,		*a.* and *s.*	*Somersworth.*
ott, Sue,	21	*a.* and *s.*	*Durham.*
rney, Wallace Gallinger,	34½	*a.* and *s.*	*Dover.*

SECOND YEAR TWO-YEAR AGRICULTURE.

lams, Eloi Augustus,	64	*Wellesley, Mass.*
ndrew, Neal Davis,	62	*Littleton.*
ssett, George Albert,	58	*Fremont.*
ennett, Ellwood Vance,	54	*Laconia.*
ackett, Edwin Labaree,	69	*Dover.*
llender, Robert Stebbins,	61	*Bethlehem.*
rleton, Dwight Edward,	61	*Lancaster.*
lby, Charles Henry,	58	*Franconia.*
rliss, Haven Ellmey,	48	*Lakeport.*
owley, Carl Elmer,	58	*Ashland.*
tting, Adna James,	60	*Orford.*
avis, Clark Edwin,	63	*Salem Depot.*
stman, Harold Lowell,	63	*Concord.*
am, George Henry,	53	*East Canterbury.*
ay, Paul Baxter,	61	*New London.*
odrich, Arthur Ernest,	56	*Wolfeboro.*
ordon, Charles Adams,	37	*New London.*
ould, Chester Earle,	64	*Newton Junction.*
reen, Sidney James,	79	*Munsonville.*
riffith, Carroll Potter,	43	*Tamworth.*
arling, Davis Herbert,	61	*Jaffrey.*
arlow, John Joseph,	53	*North Easton.*
ughes, Elmer Cutting,	59	*Ashland.*
unt, Harold Fay,	52	*Lebanon.*
untington, Lester William,	42	*Henniker.*

Name.	Hours' Credit.	P. O. Address.
Irvine, William Henry,	49	*Exeter.*
Joslyn, Elwyn Duane,	62	*Durham.*
Low, Wesley Dutton,	48	*Derry.*
Megrath, William A.,	66	*Loudon.*
Merrill, Dean Bixby,	57	*North Sutton.*
Norman, Edward James,	60	*Lee, Mass.*
Norris, Raymond Alan,	61	*East Derry.*
Olson, Oscar Sigfred,	60	*Concord.*
Poland, Charles Wesley,	62	*Lebanon.*
Redden, Dennis Christopher,	75	*Dover.*
Rice, Lee Laughna,	55	*Worcester, Mass.*
Russell, Kenneth Samuel,	60	*Exeter.*
Schoolcraft, Allen Hyde,	60	*Cheever.*
Scovell, Charles Maxwell,	42	*Haverhill, Mass.*
Smith, Herbert Arthur,	56	*Newfields.*
Sutherland, Aretas B.,	53	*Plymouth.*
Swett, Harold Franklin,	57	*Andover.*
Tootill, Philip Angus,	39	*Grafton.*
Turner, Ralph Henry,	56	*East Jaffrey.*
Turner, Raymond Leavitt,	63	*North Reading, Mass.*
Whitcomb, Harlan J.,	56	*Brookline.*
Woodward, Joshua Loring,	40	*Brookline, Mass.*

FIRST YEAR TWO-YEAR AGRICULTURE.

Hours of credit are not computed for students unable, for various reaso to complete the semester.

Abbott, Roland Webster,	11	*Hudson.*
Ames, Richard Caldwell,	15	*North Easton, Mass.*
Ames, Roger Morrill,	16	*Lakeport.*
Andrew, Edwin John,		*Concord.*
Bonardi, Harold Philip,		*Lebanon.*
Broughton, John Churchill,		*North Conway.*
Bundy, Harold R.,	19	*Bethel, Vt.*
Burley, Harold Dixon,		*North Leominster, Mass*
Cate, Eben Woodman,	19	*Laconia.*
Cofran, Dustin Charles,	19	*Manchester.*
Colcord, John Edward,	19	*Derry.*
Currier, Richard Augustus,		*Lochmere.*
Doyle, Peter James,	19	*Hampton Falls.*
Dudley, John,		*Raymond.*
Eastman, James,	16	*West Canaan.*
Ellis, Joseph Harvey,	19	*Somerville, Mass.*
Emery, Ralph Benton,	29	*Sanford, Me.*

Name.	Hours' Credit.	P. O. Address.
Estabrook, Harold Prentiss,		*Alstead.*
Farnham, John Leon,		*North Haverhill.*
Felker, Clarence George,	7	*Dover.*
Forbush, Cyril Winthrop,	19	*Newton, Mass.*
Foss, Arthur Lester,	19	*Tilton.*
Foss, Ralph Eugene,	16	*South Berwick, Me.*
French, Leo Copp,	19	*Tilton.*
Friel, Michael James,	19	*Pittsfield.*
Gilson, Henry Carl,	19	*Windham.*
Golding, Norman Randall,	19	*Biddeford, Me.*
Gould, Walter,	15	*Dunbarton.*
Holbrook, Holman Arcsel,	18	*Colebrook.*
Ireland, John Burnham,		*Dunbarton.*
Jewett, Maurice Benjamin,	13	*Laconia.*
Jones, Leon Charles,	19	*Lancaster.*
Kenison, Darrel Ona,	19	*Starrking.*
Kimball, Richard Henry,	19	*Manchester.*
Laugher, Horace Batava,	19	*Worcester, Mass.*
Leonard, George Wesley,	19	*Piermont.*
Magoon, Kenneth Faunce,		*Rochester.*
McIntyre, Grover Clifton,	19	*Dover.*
Marshall, Chester Adams,	17	*Lancaster.*
Martin, Horace Sawyer,	13	*Warner.*
Merrill, Frank Henry,		*Warren.*
Merrill, Henry Hubert,	16	*Littleton.*
Merrill, Roger Moulton,	19	*Hampton Falls.*
Meserve, Winthrop Emerson,	19	*Durham.*
Miller, William Taylor,	18	*Oil City, Penn.*
Minot, George Cavis,	19	*Bath.*
Moody, Franklin Crosby,	19	*Greenland.*
Nutter, John William,	15	*Woodsville.*
Parker, John Lloyd,	16	*Hawley, Mass.*
Peterson, Albert,	19	*Raymond.*
Petmezas, Constentin A.,	17	*Portsmouth.*
Prentiss, Fred Roberts,	18	*Alstead.*
Ries, Waldo,	17	*New York, N. Y.*
Rose, Herbert Adams,	19	*Andover, Mass.*
Rounds, Ward Barton,	19	*West Milan.*
Russell, Raymond Clarke,		*Franklin.*
Sanborn, Morrill Joseph,	10	*Rochester.*
Sargent, Paul Nelson,		*East Kingston.*
Shaw, Herman Weare,	17	*Exeter.*
Smalley, Maxwell William,	13	*Walpole.*
Smith, Carl Davis,	19	*Ashland.*

Name.	Hours' Credit.	Course.	P. O. Address.
Smith, Dwight George,	19		*Nashua.*
Smith, Henry George,			*Manchester.*
Stevens, Harold Rudolf,	20		*South Lincoln, Mass.*
Walker, George Frank,			*Newmarket.*
Walker, Herbert George,			*Franconia.*
Webster, Everett Woodman,	19		*Medford, Mass.*
Weston, Walter Kemp,	18		*Nashua.*
Whitman, Robert Charles,	19		*Drewsville.*
Williams, John Charles,	13		*Peterborough.*
Wilmot, Roland Theodore,			*Gonic.*

FIRST YEAR TWO-YEAR ENGINEERS.

Hours of credit are not computed for students unable, for various reasons, to complete the semester.

Bingham, George Hutchins,		*e. e.*	*Manchester.*
Brien, Armand Alfred,	18	*e. e.*	*Manchester.*
Brown, Harvey Wm. D.,		*e. e.*	*Newport.*
Calef, Leon Chesley,	18	*e. e.*	*East Barrington.*
Clark, Walter Ellery,	18	*e. e.*	*Franklin.*
Comings, Joseph Taylor,	15	*m. e.*	*Exeter.*
Davis, Fred Norman,		*e. e.*	*Rochester.*
Dearborn, Zelle Francis,	18	*m. e.*	*Epping.*
Erskine, Guy Harvey,	18	*e. e.*	*Manchester.*
Fellows, Weldon Harris,	18	*e. e.*	*Laconia.*
Fiske, Clarence Warren,	16	*e. e.*	*Dublin.*
Fletcher, Norman Waldo,	10	*e. e.*	*East Washington.*
Gallant, Albert Bissett,		*e. e.*	*Newmarket.*
Gammons, Philip Ellis,		*e. e.*	*Ashland.*
Garland, George Albion,		*e. e.*	*Newington.*
Goodrich, Ransom Elmer,	18	*m. e.*	*Wolfeboro.*
Hardy, Robert Harrison,	18	*e. e.*	*Somerville, Mass.*
Johnson, Robert,	18	*e. e.*	*Manchester.*
Kendal, Herbert Brigham, Jr.,		*m. e.*	*Wolfeboro.*
Leavitt, Harold Dudley,	10	*e. e.*	*Lincoln.*
McReel, William Alexander,		*m. e.*	*Exeter.*
Mitchell, Frederick Wm.,	10	*e. e.*	*Dover.*
Ouellette, Eugene George,	18	*e. e.*	*Brookline.*
Page, True Ozro,		*m. e.*	*Durham.*
Paine, Gardner Lloyd,	12	*e. e.*	*Berlin.*
Perkins, Frank Douglas,	12	*e. e.*	*Hampton Falls.*
Pettigrew, Herman Elroy,	13	*e. e.*	*Portsmouth.*
Potter, Francis Taylor,	18	*e. e.*	*Mountainview.*
Pratt, Harris Franklin,		*e. e.*	*Center Barnstead.*
Roberts, Leon Lester,	18	*e. e.*	*Portsmouth.*

Name.	Hours' Credit.	Course.	P. O. Address.
Rutledge, Bradley Gardner,		*m. e.*	*Portsmouth.*
Schoonmaker, Charles Jenkins,		*e. e.*	*Durham.*
Taylor, Warren Howard,	10	*m. e.*	*Stamford, Conn.*
Twombly, Charles Whittier,		*e. e.*	*Center Strafford.*
Warren, Charles Libbey,	18	*m. e.*	*Wolfeboro.*
Watson, Wesley,	18	*e. e.*	*Manchester.*
Weigel, Frederick Albert,	20	*e. e.*	*Lawrence, Mass.*
Woods, Harold Richmond,		*e. e.*	*Epping.*
Woodward, Alfred Errol,	11	*e. e.*	*Monadnock.*

WINTER SHORT COURSES.

Ames, Herbert Thurlow,	*Lakeport.*
Atwood, Mrs. Harry,	*Newfields.*
Brackett, T. J.,	*Greenland.*
Brown, Charles Edward,	*Concord Junction, Mass.*
Burpee, L. B.,	*Exeter.*
Cate, Thomas Jefferson,	*Chester.*
Chamberlin, James S.,	*Durham.*
Chamberlin, Mrs. James S.,	*Durham.*
Colby, Clarence Elmer,	*Manchester.*
Corey, Harvey D.,	*Brookline.*
Dalrymple, Raymond James,	*West Hopkinton.*
DeLaney, Miss Stella,	*Durham.*
Dow, Albert N.,	*Exeter.*
Estes, Charles L.,	*Somersworth.*
Hall, Albert I.,	*Rochester.*
Hayes, W. C.,	*South Danbury.*
Hoit, R. H.,	*Grasmere.*
Horne, S. C.,	*Somersworth.*
Jordan, Farnum B.,	*Saylesville, R. I.*
Keyser, Warren F.,	*Bristol.*
LeBaron, Mrs. Margaret,	*Manchester.*
Madden, William John,	*Peterborough.*
Miller, Walter Herbert,	*Methuen, Mass.*
Mitchell, Jerry,	*Durham.*
Murphy, Frank P.,	*West Kennebunk, Me.*
Parkman, Ruth Morton,	*Stratham.*
Peaslee, Josephine L.,	*Newton.*
Perkins, Eugene Frederick,	*New London.*
Peterson, Theodore,	*Raymond.*
Rowell, Norman J.,	*Newton.*
Skinner, A. Louise,	*Stratham.*
Upham, C. J.,	*Amherst.*
Upham, Mrs. C. J.,	*Amherst.*
York, Miss Effie,	*Plymouth.*
Young, Merrill Aldrich,	*Walpole.*

SUMMARY OF REGISTRATION 1915–1916.

	Agriculture.					Engineering.			Arts and Science.			Men.	Women.	Totals.
	Reg.	Gen.	A. H. & D.	Hort.	For.	C. E.	E. E.	M. E.	Gen.	H. E.	M. A. T.			
Graduates	2	..	..	..	..	1	..	..	2	..	..	4	1	5
Seniors	..	7	12	3	..	4	8	2	30	5	5	59	17	76
Juniors	..	4	9	4	4	6	13	1	27	14	8	64	26	90
Sophomores	40	..	..	..	..	13	11	3	32	12	3	93	21	114
Freshmen	32	..	..	..	..	15	22	12	52	25	4	117	45	162
Total 4-year and Graduates	74	11	21	7	4	39	54	18	143	56	20	337	110	447
Total Divisions	..	..	..	..	117	..	..	111	..	..	219	..	..	..
1st year Two-year	71	..	..	..	..	..	30	9	..	..	..	110	..	110
2d year Two-year	47	..	..	..	..	..	..	..	..	..	..	47	..	47
Specials	4	..	..	..	..	2	1	..	6	..	1	11	3	14
Winter Short Courses	35	..	..	..	..	..	..	..	..	..	..	35	..	35
Totals	231	11	21	7	4	41	85	27	149	56	21	540	113	653
Totals by Divisions	..	..	..	..	274	..	..	153	..	..	226			
One Week Course	325	..	..	..	..	..	..	..	..	..	..	..	..	325

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VOLUME VIII NUMBER 2

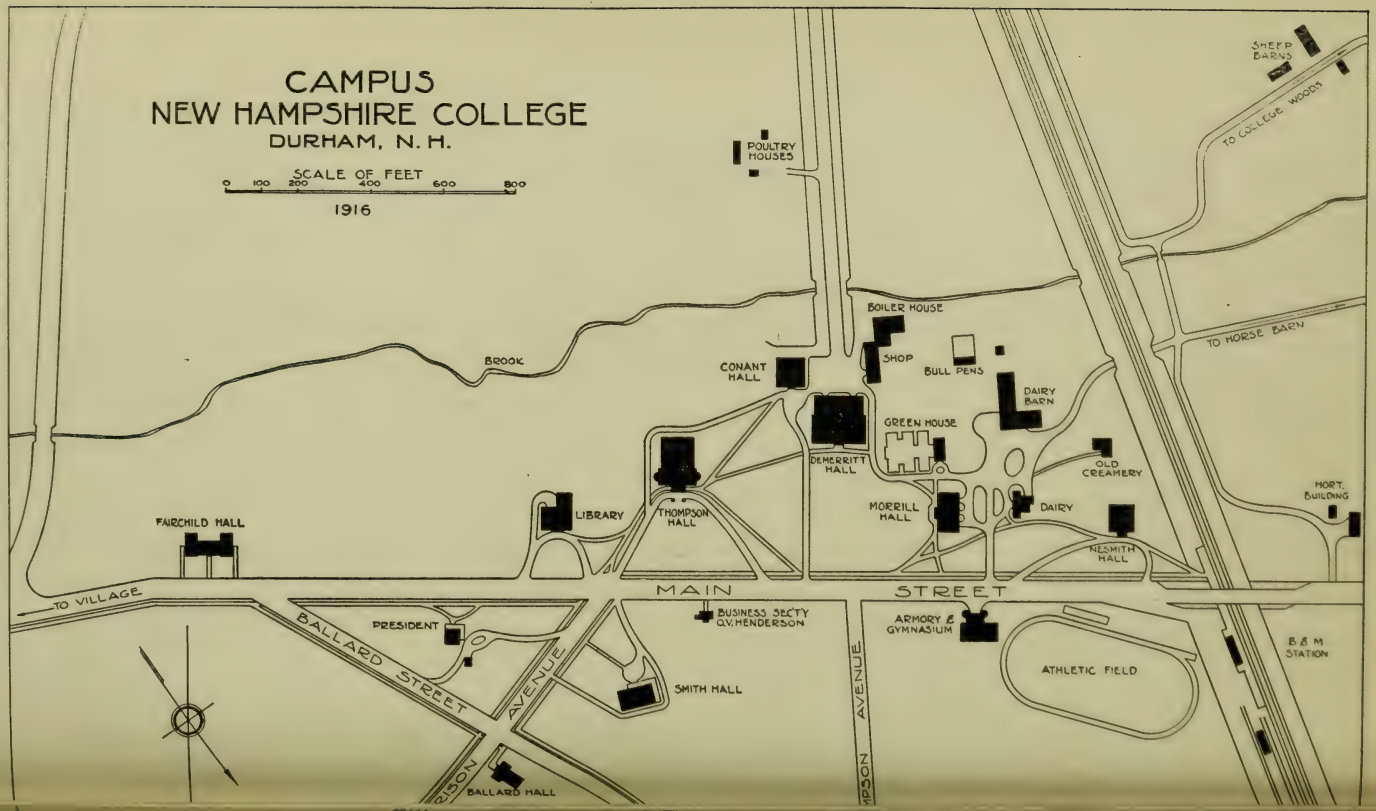
The New Hampshire College Announcement and Register

1917–1918

FORTY-NINTH YEAR

REGISTER, - - 1916-1917
ANNOUNCEMENT, 1917-1918

Durham, New Hampshire
Published by the College


CAMPUS
NEW HAMPSHIRE COLLEGE
DURHAM, N. H.
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1916
POULTRY HOUSES
SHEEP BARNS
TO COLLEGE WOODS
BOILER HOUSE
SHOP
BULL PENS
TO HORSE BARN
BROOK
CONANT HALL
DAIRY BARN
GREEN HOUSE
DEMERRITT HALL
OLD CREAMERY
HORT. BUILDING
LIBRARY
THOMPSON HALL
MORRILL HALL
DAIRY
NESMITH HALL
FAIRCHILD HALL
TO VILLAGE
MAIN STREET
BUSINESS SECY G.V. HENDERSON
ARMORY & GYMNASIUM
B & M STATION
PRESIDENT
BALLARD STREET
AVENUE
SMITH HALL
ATHLETIC FIELD
AVENUE
BALLARD HALL

The New Hampshire College of Agriculture and the Mechanic Arts Bulletin

Durham, New Hampshire

APRIL, 1917

Entered as second class matter, August 5, 1907, at the Post Office at Durham, N. H., under the Act of Congress of July 16, 1894

CALENDAR

1917

JANUARY.						
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COLLEGE CALENDAR.

1917.

First Semester.

Entrance Examinations begin	*Tuesday, September 11.*
Registration Day	*Wednesday, September 19.*
Address to Student Body	*Thursday, September 20.*
Meeting of Trustees	*Wednesday, October 10.*
Columbus Day	*Friday, October 12.*
College closes at noon	*Wednesday, November 28.*
College opens at noon	*Monday, December 3.*
College closes, 4 p.m.	*Friday, December 21.*

1918.

College opens at noon	*Monday, January 7.*
Meeting of Trustees	*Wednesday, January 9.*
Midyear Examinations begin	*Monday, January 28.*
Midyear Examinations close	*Saturday, February 2.*

Second Semester.

Registration Day	*Monday, February 4.*
Washington's Birthday	*Friday, February 22.*
No exercises after 10 a.m.	*Tuesday, March 12.*
College closes, 4 p.m.	*Tuesday, April 2.*
College opens, 8 a.m.	*Wednesday, April 10.*
Meeting of Trustees	*Wednesday, April 10.*
Junior Promenade begins, 4 p.m.	*Thursday, May 9.*
Junior Promenade closes, 2 p.m.	*Sunday, May 12.*
Graduation Two-year Course	*Wednesday, May 15.*
Memorial Day	*Thursday, May 30.*
Senior Examinations close, 4 p.m.	*Tuesday, June 4.*
Final Examinations begin	*Monday, June 3.*
Final Examinations close	*Saturday, June 8.*
Baccalaureate Sermon	*Sunday, June 9.*
Class Day	*Tuesday, June 11.*
Meeting of Trustees	*Tuesday, June 11.*
Commencement Day	*Wednesday, June 12.*

BOARD OF TRUSTEES.

HIS EXCELLENCY, GOVERNOR HENRY W. KEYES, A.B., B.S., *ex officio.*

PRESIDENT *ex-offici*

*HON. HARVEY L. BOUTWELL, B.S., LL.D., Malden, Mass *President.*
Sept. 1, 1911, to Sept. 1, 1917.

HON. JAMES A. TUFTS, A.B., Exeter, *Secretary.*
Jan. 10, 1914, to June 14, 1919.

HON. WALTER DREW, Colebrook.
Aug. 30, 1902, to Aug. 30, 1917.

*HON. EDWARD H. WASON, B.S., D.Sc., Nashua.
Jan. 16, 1906, to Aug. 1, 1919.

HON. GEORGE H. BINGHAM, A.B., LL.B., Manchester.
Dec. 2, 1908, to Dec. 2, 1917.

HON. RICHARD W. SULLOWAY, A.B., Franklin.
May 13, 1909, to Oct. 9, 1918.

HON. WILLIAM H. CALDWELL, B.S., Peterborough.
July 29, 1912, to July 29, 1918.

HON. EUGENE S. DANIELL, Greenland.
June 14, 1916, to June 14, 1919.

HON. ROY D. HUNTER, West Claremont.
June 14, 1916, to June 14, 1919.

HON. HENRY C. PHILLIPS, Haverhill.
Nov. 24, 1916, to July 17, 1917.

HON. DWIGHT HALL, A.B., Dover.
Oct. 29, 1915, to Oct. 17, 1918.

OFFICERS OF ADMINISTRATION.

President of the Colleg

CHARLES H. PETTEE, A.M., C.E., LL.D., *Dean of the Colleg Acting President.*

FREDERICK W. TAYLOR, B.Sc. (Agr.), *Dean of Agricultur Division.*

CHARLES E. HEWITT, B.S., M.M.E., *Dean of Engineering Div sion.*

ERNEST R. GROVES, A.B., B.D., *Dean of Arts and Science Div sion.*

* Elected by the Alumni.

HELEN KNOWLTON, A.B., *Dean of Women.*
JOHN C. KENDALL, B.S., *Director of Experiment Station and Extension Work.*
CONDA J. HAM, A.B., *Registrar and Secretary of the Faculty.*
WALTER M. PARKER, A.B., *Treasurer.*
OREN V. HENDERSON, *Business Secretary.*
CHARLES W. STONE, A.M., *Superintendent of Farm.*
OSCAR W. STRAW, *Superintendent of Power and Service and Curator of Buildings.*

ASSISTANTS IN ADMINISTRATION.

MARTHA F. EMERSON, *Librarian.*
CHARLOTTE A. THOMPSON, *Assistant Librarian.*
CAROLINE A. BARSTOW, *Assistant Librarian.*
MARCIA N. SANDERS, *Matron of Smith Hall.*
ELIZABETH P. DEMERITT, *Matron of Ballard Hall.*
ARABELLA S. LIVINGSTON, *Matron of Bickford Hall.*
NATHANIEL E. CURTIS, *Proctor of Fairchild Hall.*
ANNIE J. MORGAN, *Manager of Book Store.*
VELMA W. DAVIS, *Secretary to the President.*
BEATRICE M. RICHMOND, *Bookkeeper.*
BEULAH M. MADDOX, *Secretary to the Business Secretary.*
MARTHA C. BLODGETT, A.B., *Secretary to the Dean.*

THE COLLEGE FACULTY* AND TEACHING STAFF.

President of the College.

PROFESSORS†.

CHARLES H. PETTEE, A.M., C.E., LL.D., *Dean and Professor of Mathematics.*
CLARENCE W. SCOTT, A.M., LL.D., *Professor of History.*
FREDERICK W. TAYLOR, B.Sc. (Agr.), *Dean of Agricultural Division and Professor of Agronomy.*
RICHARD WHORISKEY, JR., A.B., *Professor of Modern Languages.*
CHARLES E. HEWITT, B.S., M.M.E., *Dean of Engineering Division and Professor of Electrical Engineering.*
ERNEST R. GROVES, A.B., B.D., *Dean of Arts and Science Division and Professor of Sociology.*
C. FLOYD JACKSON, B.S., A.M., *Professor of Zoölogy and Entomology.*

* The faculty is composed of the president of the college, full professors, associate professors, assistant professors, and the director of the experiment station and of extension work.

† Arranged in order of seniority of appointment.

WALTER C. O'KANE, A.M., *Professor of Economic Entomology.*
CHARLES JAMES, F.I.C., *Professor of Chemistry.*
ALFRED E. RICHARDS, Ph.D., *Professor of English.*
ORMOND R. BUTLER, Ph.D., *Professor of Botany.*
JOSEPH H. GOURLEY, M.S., *Professor of Horticulture.*
OTTO L. ECKMAN, B.S. (Agr.), *Professor of Animal Husbandry.*
JOHN C. KENDALL, B.S., *Director of Experiment Station and E: tension Work.*
ERIC T. HUDDLESTON, B.Arch., *Professor of Drawing and Desig:*
CHARLES L. SIMMERS, A.B., *Professor of Education and Ps: chology.*
ROY H. PORTER, B.S., M.E., *Professor of Mechanical Engineerin.*
WILLIAM H. COWELL, B.S., *Physical and Athletic Director.*
KARL W. WOODWARD, A.B., M.F., *Professor of Forestry.*
ROBERT V. MITCHELL, B.S., *Professor of Poultry.*
HELEN KNOWLTON, A.B., *Dean of Women and Professor of Hon Economics.*
JOHN M. FULLER, B.S., *Professor of Dairying.*
VERNON A. SUYDAM, Ph.D., *Professor of Physics.*
CHARLES A. HUNT, B.S., *Captain U. S. Infantry, Professor of Mil tary Science and Tactics.*

ASSOCIATE PROFESSORS.*

FRANK C. MOORE, A.B., *Associate Professor of Mathematics.*
GEORGE A. PERLEY, M.S., *Associate Professor of Chemistry.*
CHARLES C. STECK, A.B., M.S., *Associate Professor of Mathema ics.*
CAROLINE A. BLACK, Ph.D., *Associate Professor of Botany.*
WILLIAM H. WOLFF, M.S., *Associate Professor of Pomology.*

ASSISTANT PROFESSORS.*

LEON W. HITCHCOCK, B.S., *Assistant Professor of Electrical En gineering.*
HAROLD H. SCUDDER, B.S., *Assistant Professor of English.*
FORD S. PRINCE, B.S., *Assistant Professor in Agronomy.*
FRIEDA REINER, B.S., *Assistant Professor in Home Economics.*
W. ROSS WILSON, B.S. (Agr.), *Assistant Professor in Dairying.*
OLUS J. STEWART, Ph.B., A.B., M.S., *Assistant Professor i Chemistry.*
JOHN B. SCHERRER, B.S., *Assistant Professor in Vegetable Gardening*
MARION O'K. McKAY, B.S., A.B., A.M., *Assistant Professor i Economics.*
WILLIAM H. SEVERNS, B.S., M.S., *Assistant Professor in Mechan ical Engineering.*

* Arranged in order of seniority of appointment.

INSTRUCTORS.*

HOMAS J. LATON, B.S., *Instructor in Drawing.*
LEMENT MORAN, A.B., *Instructor in Physics.*
ONDA J. HAM, A.B., *Instructor in Accounting.*
ARRY P. YOUNG, B.S., *Instructor in Agronomy.*
AMES MACFARLANE, *Instructor in Floriculture.*
LIFFORD J. FAWCETT, B.S., *Instructor in Animal Husbandry.*
YMAN J. BATCHELDER, *Instructor in Wood Shop and Foundry Practice.*
LIZABETH A. ROLLINS, *Instructor in Physical Culture.*
HARLES H. BATCHELDER, B.S., M.S., *Instructor in Zoölogy.*
HIRLEY E. CULVER, A.M., *Instructor in Modern Languages.*
ARL A. GARABEDIAN, B.S., M.S., *Instructor in Mathematics.*
AROLD D. McBRIDE, *Instructor in Machine Work and Forging.*
RED N. RAYMOND, B.S., *Instructor in Modern Languages and English.*
LYDE C. WHIPPLE, B.S., *Instructor in Electrical Engineering.*
ALTER D. EMERSON, B.S., *Instructor in Mechanical Engineering and Physics.*
ILLIAM L. DORAN, B.S., *Instructor in Botany.*

ASSISTANTS.*

LARENCE R. CLEVELAND, A.B., *Assistant in Economic Entomology.*
RTHUR S. AMBROSE, B.S., *Assistant in Dairying.*
RNOLD J. GRANT, B.S., *Assistant in Chemistry.*
AYMOND J. BEAN, B.S., M.S., *Assistant in Zoölogy.*
LBERT W. GAMASH, B.S., *Assistant in Forestry.*
HARLES F. SCOTT, B.S., *Assistant in Political Science.*
RABELLA S. LIVINGSTON, B.S., *Assistant in Home Economics.*
ELAND CRAFTS, B.S., *Assistant in Modern Languages and English.*

* Arranged in order of seniority of appointment.

NEW HAMPSHIRE AGRICULTURAL EXPERIMENT STATION.

THE STATION STAFF.

CHARLES H. PETTEE, A.M., C.E., LL.D., *Acting President.*
JOHN C. KENDALL, B.S., *Director.*
F. W. TAYLOR, B.Sc. (Agr.), *Agronomist.*
B. E. CURRY, A.B., *Chemist.*
W. C. O'KANE, A.M., *Entomologist.*
J. H. GOURLEY, M.S., *Horticulturist.*
O. R. BUTLER, Ph.D., *Botanist.*
E. G. RITZMAN, B.S., *Animal Husbandman.*
K. W. WOODWARD, A.B., M.F., *Forester.*
J. M. FULLER, B.S., *Dairyman.*
W. H. WOLFF, M.S., *Assistant Horticulturist.*
T. O. SMITH, A.B., *Assistant Chemist.*
J. B. SCHERRER, B.S., *Assistant in Vegetable Gardening.*
FORD S. PRINCE, B.S., *Assistant Agronomist.*
C. R. CLEVELAND, B.S., *Assistant Entomologist.*
HARRY P. YOUNG, B.S., *Assistant Agronomist.*
A. W. GAMASH, B.S., *Assistant Forester.*
JAMES MACFARLANE, *Florist.*
W. L. DORAN, B.S., *Assistant Botanist.*
A. D. LITTLEHALE, *Shepherd.*

Assistants to the Staff.

MARTHA F. EMERSON, *Librarian.*
O. V. HENDERSON, *Purchasing Agent.*
BEATRICE M. RICHMOND, *Bookkeeper.*
LAURA B. BICKFORD, *Stenographer.*
ELIZABETH E. MEHAFFEY, *Assistant Librarian and Mailing Clerk.*
BEATRICE E. CARLISLE, *Stenographer.*

THE EXTENSION SERVICE.

GENERAL EXTENSION STAFF.

CHARLES H. PETTEE, A.M., C.E., LL.D., *Acting President.*
J. C. KENDALL, B.S., *Director of Extension Work.*
M. C. WILSON, B.S., *State Leader, County Agent Work.*
W. P. DAVIS, *In Charge Dairy Cow Test Association Work.*
C. L. LONG, M.S., *In Charge Orchard Demonstrations.*
SARAH L. BATES, *In Charge Extension Work in Home Economics.*
L. A. CARLISLE, B.S., *In Charge Boys' Club Work.*
MARY L. SANBORN, *In Charge Girls' Club Work.*
R. F. TABER, B.Sc., *Farm Management Demonstrator.*
B. B. RICHARDSON, B.S.A., *Assistant in Boys' Club Work.*
BEULAH I. HAZARD, *Assistant in Girls' Club Work.*

County Agents.

H. N. WELLS, *County Agent, Sullivan County.*
F. N. DARLING, B.S., *County Agent, Cheshire County.*
E. T. LEWIS, *County Agent, Coös County.*
A. G. DAVIS, *County Agent, Merrimack County.*
A. W. BENNER, *County Agent, Grafton County.*
F. L. BALLARD, B.S., *County Agent, Hillsboro County.*
R. E. DEUEL, B.S.A., *County Agent, Rockingham County.*
M. J. McNAMARA, B.S., *County Agent, Belknap County.*

Assistants to the Staff.

MARTHA E. FISHER, *Stenographer.*
KATHARINE H. PIPER, *Stenographer.*

HISTORICAL SKETCH.

The New Hampshire College of Agriculture and the Mechanic Arts was created by an act of the New Hampshire legislature in 1866 and was established at Hanover as a state institution, in connection with Dartmouth College. In its foundation the state legislature had accepted the conditions of an act of the federal congress of July 2, 1862, entitled "An act donating public lands to the several states and territories which may provide colleges for the benefit of agriculture and the mechanic arts." The state had accepted the land grant three years earlier, July 9, 1863.

In 1893 the college was moved from Hanover to Durham. This action followed the death of Benjamin Thompson, a farmer of Durham, who died January 30, 1890, and left to the college his entire estate, excepting a few minor reservations. The legislature accepted this bequest March 5, 1891, and appropriated the necessary money for the first buildings.

Mr. Thompson wrote in his will, "My object being mainly to promote the improvement of agriculture, though willing that the college to be established should also provide for the mechanic arts, it is my will that the institution to be established by the state . . . shall be called and designated . . . The New Hampshire College of Agriculture and the Mechanic Arts, if that shall be the wish of the state; and that in addition to the instruction to be given therein, as provided by my said will, there shall be taught only such other arts or sciences as may be necessary to enable said state to fully avail itself of said donation of lands by the government in good faith, which two branches of instruction shall be the leading objects of said institution or college."

Shortly before the state accepted this bequest of Mr. Thompson the legislature further provided for the college by

accepting the provisions of an act of congress known as the Morrill Bill. This legislation made available federal appropriations "for instruction in agriculture, the mechanic arts, the English language, and the various branches of mathematical, physical, natural and economic science, with special reference to their applications in the industries of life, and to the facilities for such instruction."

Although the college was able to make use of the Thompson land as early as 1893, it was not until 1910 that the income from this endowment of almost $800,000 became available. At present the college has an annual income from the Thompson funds of nearly $32,000. It also receives the moneys which are available as the result of the acts of congress referred to, and the biennial appropriations of the state legislature.

The college administration is in charge of a board of thirteen trustees. The governor of the state and the president of the college are *ex-officio* members. The college alumni elect two trustees and the others are appointed by the governor with the advice and consent of the council.

EXPERIMENT STATION.

A branch of the college, known as the New Hampshire Agricultural Experiment Station, was established by the state, August 4, 1887, under an act of congress of March of that year. Its purpose is to acquire agricultural knowledge and to bring its information to the people of the state. The station is actively engaged in this work not only in Durham but throughout the commonwealth. Members of the agricultural faculty of the college serve on the station staff. There is also an extension department with a staff of twenty who are devoting their entire time to demonstration work on the farm, in the home and to agricultural clubs.

GENERAL INFORMATION.

Situation.—Durham, the home of the college, is an attractive village, on the Portland division of the Boston and Maine railroad sixty-two miles from Boston, fifty-four from Portland, Me., and five from Dover, N. H., a city of 13,000 population. Good train service makes the college easily accessible from all parts of the state.

Durham is one of the historic towns of New Hampshire. In the early days it was the home of a prosperous shipbuilding industry. Being at the head of tidewater on the Oyster River, it served as a distributing center for the interior of the state. During the Revolutionary War it was famous as the home of General John Sullivan. Near his home in the village the state has erected a fitting monument to his memory.

Courses.—The college is a part of the public school system of the state, continuing the work of the high school, and it is open to both men and women. In accord with the origin and function of the college, its courses are essentially practical, leading directly to the student's preparation for a successful livelihood.

I. Agricultural Division.

a. Four-Year Courses.
1. Animal Husbandry and Dairying.
2. Forestry.
3. Horticulture.
4. General Agriculture or Teaching.

b. Two-Year Course in Agriculture.

c. Five-Week Course in Dairying.

d. Four One-Week Winter Courses in Agronomy, Forestry and Horticulture.

e. Farmers' One-Week Course.

II. Arts and Science Division.

a. Four-Year Courses.
1. General Arts and Science.

2. Home Economics.
3. Mechanic Arts for Teachers.

III. Engineering Division.

a. Four-Year Courses.
1. Chemical Engineering.
2. Electrical Engineering.
3. Mechanical Engineering.

b. Two-Year Courses.
1. Industrial Electricity.
2. Industrial Mechanics.

ESTIMATE OF STUDENT EXPENSES

	First Semester.			Second Semester.		
	High.	Average Student.	Low.	High.	Average Student.	Low.
Tuition	$30.00	*	*	$30.00	*	*
Fees	10.00	$10.00	$10.00	10.00	$10.00	$10.00
Room	42.00	35.00	16.00	42.00	35.00	16.00
Books	10.00	9.00	8.00	10.00	9.00	8.00
Laboratory fees	5.00	2.00		5.00	2.00	
Athletics	4.50	4.00				
Laundry	8.00	5.00	2.00	8.00	5.00	2.00
Incidentals	25.00	10.00	5.00	20.00	8.00	4.00
Military suit	22.00	†	†			
	$156.50	$75.00	$41.00	$125.00	$69.00	$40.00

Board.—To the above must be added an amount necessary to pay table board. Owing to the excessive fluctuations in food costs, it has been impossible to include a fair estimate of board for next year. This will be controlled by the general price level at that time. At the college dormitory the price of board for the women students has remained at $4.25, while the men have paid somewhat more than this in the village. However, many of the men are able to materially lower the weekly cost by partially boarding themselves. The usual time students are present and pay board is 34 weeks. Two-year men have four weeks less

* Scholarships.
† Furnished by government to four-year men.

board to pay than four-year students, but this is partially offset by the cost of the military uniform which is not furnished free to them by the government.

Tuition and Fees.—Tuition is $60 a year; incidental fees are $20 a year. They are payable in advance in two equal instalments, one on the first day of each semester. A diploma fee of $5.00 is charged upon graduation. Fees for supplies and breakage are assessed in chemistry and certain other subjects where necessary.

Dormitories.—The college has three dormitories for women and one for men. All rooms are heated, lighted and furnished with the exception of bed linen, quilts and towels, which are provided by the individual students. Each women's dormitory is equipped with a laundry. In most cases, two students occupy a room or suite of rooms. Prices range from $60 to $84 for each student per year. Applications for rooms in the dormitories should be made directly to Mr. O. V. Henderson, business secretary of the college. Early application is necessary in order to secure a choice of rooms. Rooms in private families may be secured for about the same prices as for those in dormitories. Less desirable, but comfortable rooms may be obtained by men in several private dormitories at a somewhat less figure.

Women students, unless living at home, are required to room in one of the women's dormitories, or in approved houses.

Scholarships.—Scholarships are awarded annually for the purpose of aiding deserving students. Recently, the large increase in student attendance has utilized to the full all scholarships thus far provided. However, the trustees are anxious to supply scholarships to all really needy young men and women in New Hampshire. In order to do this, they necessarily require full information of all applicants in order that the benefits may be awarded most equitably.

These scholarships will be forfeited at any time for misconduct, or for the use of intoxicating liquor or tobacco.

They will also be withdrawn from students in all four-year courses who fail to secure an average grade of sixty in any one semester, and, only in cases of special financial necessity, will they be restored by the president.

Conant Scholarships.—There are twenty-seven Conant scholarships, each paying tuition, $60; fees, $20; cash, $20,—total, $100. These are assigned under the following conditions:

They are to be given to young men taking agricultural courses.

Each town in Cheshire County is entitled to one scholarship, and Jaffrey is entitled to two.

They will be reserved for their respective towns until August 1 of each year. Those not taken by students from Cheshire County, and those in excess of the number of towns, will then be assigned to agricultural students from other parts of the state, and may be divided at the discretion of the president. These scholarships are assigned annually and are good for one year only.

Senatorial Scholarships.—There are twenty-four senatorial scholarships, one for each senatorial district. They are at the disposal of the senators from these districts. These scholarships are to be assigned each year and are good for one year only. Each one pays the tuition of $60. The method of appointment is entirely at the option of the senator concerned and may be by election, competitive examination, or otherwise. It is hoped, however, that preference will be given to needy applicants. These scholarships are open to students in all courses, but are restricted to residents of the state.

Grange Scholarships.—For several years a scholarship paying tuition of $60 has been placed at the disposal of each subordinate and Pomona Grange in New Hampshire, for the use of a four-year or two-year student. These scholarships are to be assigned each year and are good for one year only. The method of appointment is entirely at the option of the grange; it may be by election, competitive

examination, or otherwise. It is hoped, however, that preference will be given to needy applicants. Holders of these scholarships need not be members of the grange, but must be resident within the state.

Valentine Smith Scholarships.—Through the generosity of the late Mr. Hamilton Smith of Durham, the sum of $10,000 has been given to the college to establish the Valentine Smith scholarships.

"The income thus accruing to the college shall be given to the graduate of an approved high school or academy who shall, upon examination, be judged to have the most thorough preparation for admission to the college."

These scholarships yield $100 annually and will be forfeited if an average rank of 75 per cent. is not maintained for each semester.

Competitive examinations for this scholarship will be held June 26, 27 and 28 in Durham, Keene, Laconia, Lancaster, Manchester and West Lebanon. Contestants must present credentials fulfilling the requirements for entrance to the college and must pass examinations in English, American history, algebra through quadratics, plane geometry and either physics or chemistry.

Examinations are not restricted to residents of the state. For examination schedule see page 48.

State Scholarships.—By an annual scholarship appropriation of $3,000, the state provides free tuition for fifty New Hampshire students. These scholarships are awarded annually strictly on the basis of financial need, and are good for one year only. Applicants must furnish full information in relation to their own financial status and that of their parents.

Prizes.—*Bailey Prize.*—Dr. C. H. Bailey of Gardner, Mass., and E. A. Bailey, B.S., of Keene, N. H., offer a prize of ten dollars for proficiency in chemistry.

Erskine Mason Memorial Prize.—Mrs. Erskine Mason of Stamford, Conn., has invested one hundred dollars as a memorial to her son, a member of the class of 1893, the in-

come of which is to be given, for the present, to that member of the senior class who has made the greatest improvement during his course.

Chase-Davis Memorial Medals.—In the spring of 1909 the Glee Club voted to present a gold and a silver medal yearly to the college in memory of Carl Chase, '09, of Webster, an enthusiastic member of the New Hampshire football team and the Glee Club, and of John Worthen Davis, '11, of Concord, who were drowned in Great Bay, December 7, 1908.

According to the terms of this gift, the gold medal is to be awarded to the senior who has won an "N. H." and stands highest in his studies, and the silver medal is to be awarded to the senior who has won an "N. H." and stands second in his studies. These medals are for excellence in athletic competition primarily, and the number of times a man wins an "N. H." during his college career shall be of importance in making the award.

Individual Drill Prizes.—First—A gold medal. *Second*—A silver medal. *Third*—A bronze medal. These are given by the college.

Junior Officer's Prize.—A saber, with belt complete, given to the junior cadet officer who excels in executing certain required movements or evolutions with a company.

Chi Omega Prize.—The Chi Omega Sorority of New Hampshire College offers a prize of ten dollars for the best thesis on a sociological subject written by a woman student in sociology 52, 54, or 58.

Lilian S. Edwards Prize.—A fund has been provided by Mrs. Lilian S. Edwards of Sanbornville for the publishing and distribution of the best thesis on a sociological subject written by a student for the Department of Sociology during the second semester of the college year.

Alumni Interscholastic Speaking Prize.—The alumni association of New Hampshire College donates each year the sum of $30 to be given in prizes at the interscholastic prize speaking contest held under the auspices of the English

Department of the college. This year the contest will be held May 18, 1917, at 8 p. m., in the college gymnasium. In addition to the original amount contributed by the alumni association, a gift of $20 has been received from a friend of the college, making the total amount in prizes $50. This sum will be divided among the winners of the contest as follows: first prize, open to all candidates, $20; second prize for boys, $10; second prize for girls, $10; third prize for boys, $5; third prize for girls, $5. Any student in good standing at a certified high school is eligible, provided the candidate has not already received the first prize at any other interscholastic prize speaking contest conducted by the college. Further information may be obtained from Professor A. E. Richards, English Department, New Hampshire College.

College Aid to Students.—Students obtain considerable financial aid by janitorships, by table work at boarding clubs, and by work on the farm and in the greenhouse. They also find employment with the power and service department of the college and with the experiment station. However, so much depends upon the individuality of the student that the college can guarantee nothing in any particular case, but is glad to assist by informing students of opportunities for work.

Students may purchase at cost all books, drawing instruments, materials, etc., at the college book-store in Thompson Hall.

Registration.—Undergraduate students are required to register before 4 p. m. of the first day of each semester. Registration will open on August 1. Those desiring to register by mail or in person after August 1, should write the registrar for registration blanks, which, when filled out, should be forwarded to the business secretary, together with the student's remittance for his semester's tuition, and fees.

Any former student who registers after the first day of a semester will be charged for such registration a fine of one dollar for the first day and fifty cents additional for each succeeding day, to be remitted only by the president

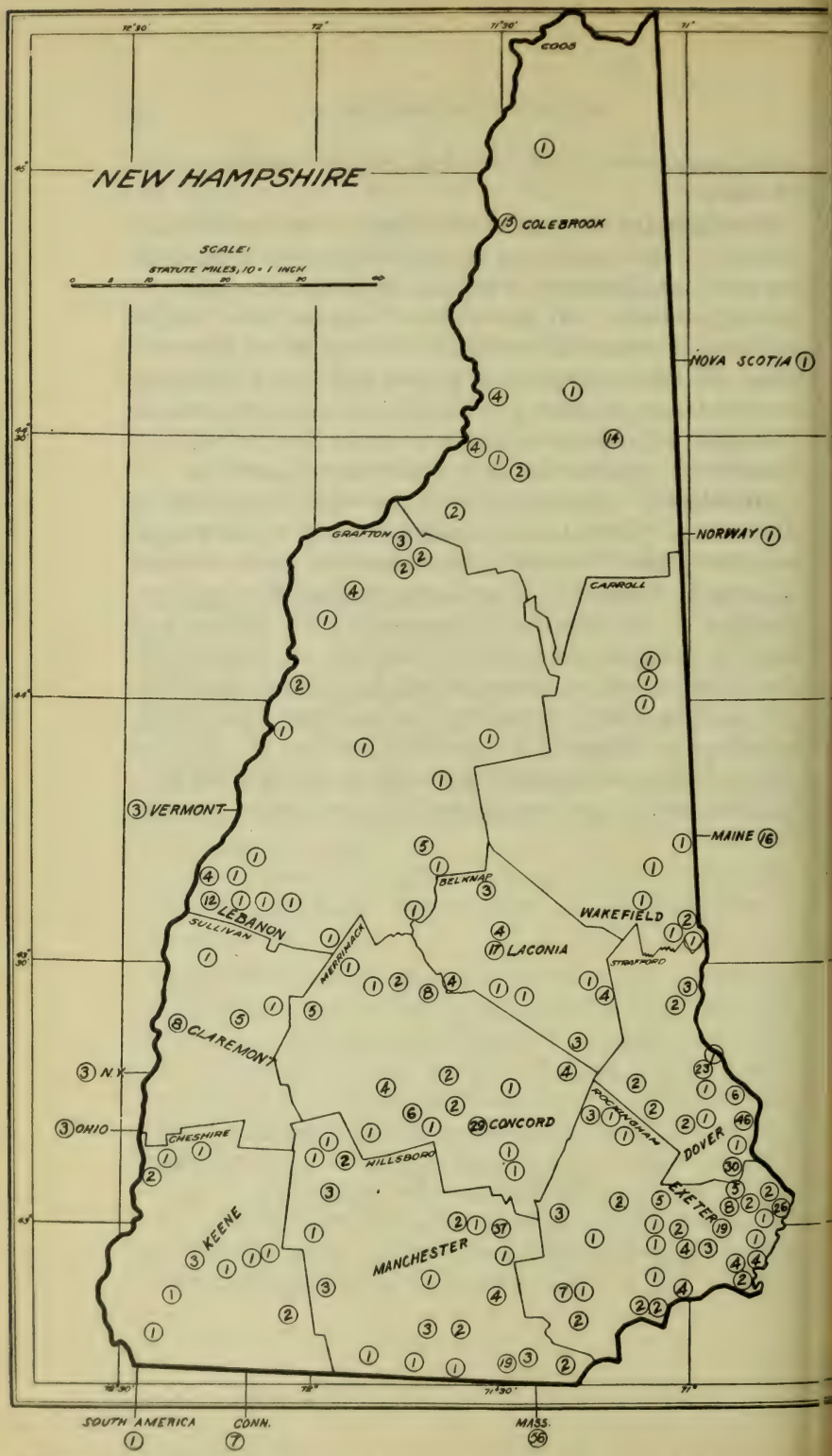
upon presentation by the student of a substantial excuse for delay.

Warnings and Reports of Standing.—New students are notified by the registrar of all studies in which their work has been unsatisfactory, at the end of the first five weeks of the first semester. At the middle of each semester, official warnings of unsatisfactory work are sent to all students. When official warnings totaling more than seven hours are received by any student, a notice is also sent to the parents.

Reports of grades attained are sent, at the close of each semester, to students and to their parents or guardians.

Attendance.—Attendance at convocation is required of all students. Attendance at military drill is required of all men during their first two years unless excused on account of physical disability. Certificates of disability must be obtained of the physician designated by the college, and must be renewed annually. All women are required to elect physical culture unless excused for physical disability.

A student absent from the class exercise immediately preceding or following a scheduled holiday or vacation period shall be subject to a fine of $5.00, unless permission for the absence has been granted by the proper division committee.



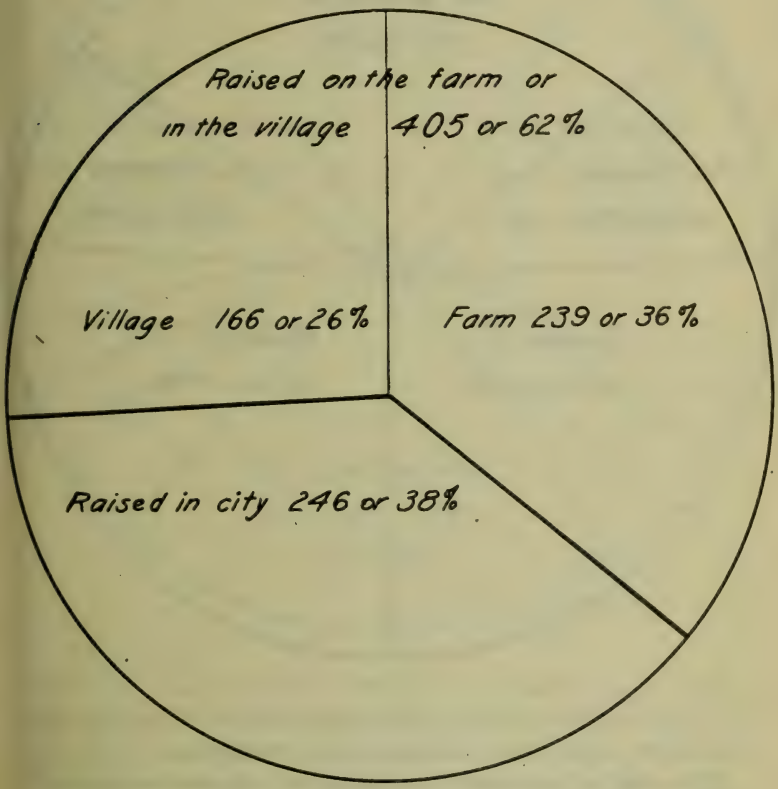
Numbers within circles represent number of students who registered in 1916–1917 from that particular

NOTES ON REGISTRATION.

CONDA J. HAM, *Registrar.*

Figures Suggest; Charts Portray; Results Tell.—We give herewith the figures, and exhibit the charts, but will

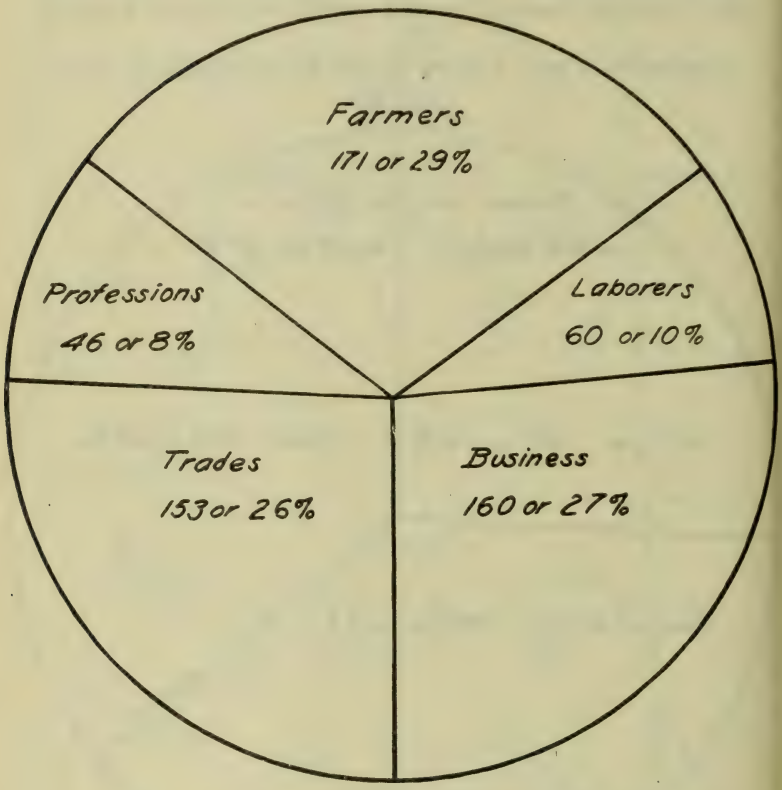
COMMUNITIES FROM WHICH STUDENTS ARE DRAWN



allow you to judge New Hampshire College by its results. Its graduates, an ever increasing number, are living in

every county of the state, and are scattered throughout the nation. Its departments are being enlarged and the courses made more valuable every year. Its agricultural experiment station and extension service are of benefit to all

OCCUPATIONS OF THE FATHERS OF OUR STUDENTS

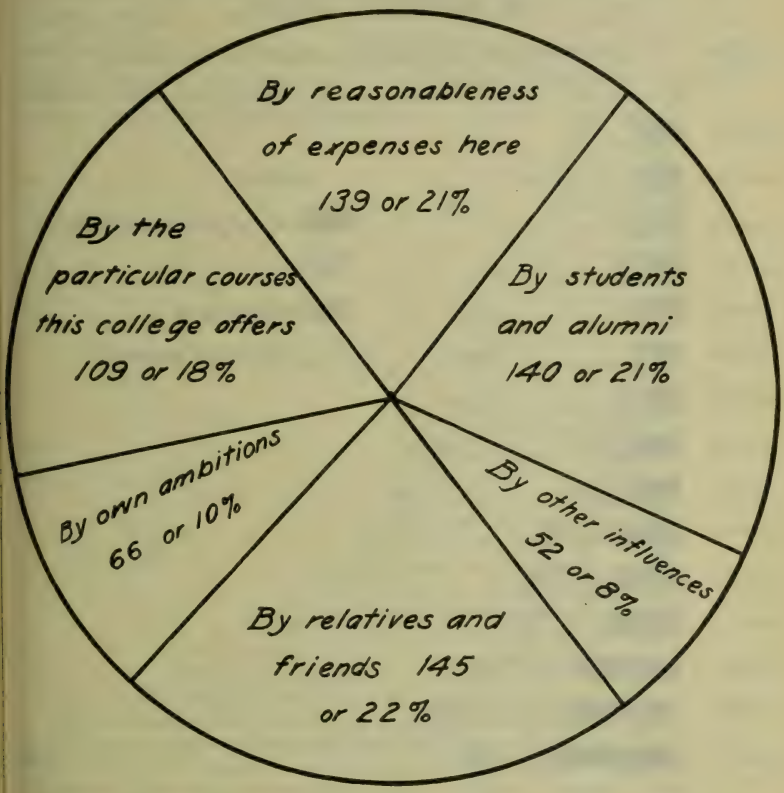


New Hampshire citizens. These are some of the results by which the value of the college may be measured.

The map of registration explains at a glance the general distribution of our students. This shows the college to be a state institution in the real sense, serving every section of

the state. Our students are mainly residents of New Hampshire, and a large number come from the farming communities and small villages. The charts on pages 21 and 22.

FACTORS WHICH INFLUENCED STUDENTS TO COME TO NEW HAMPSHIRE COLLEGE



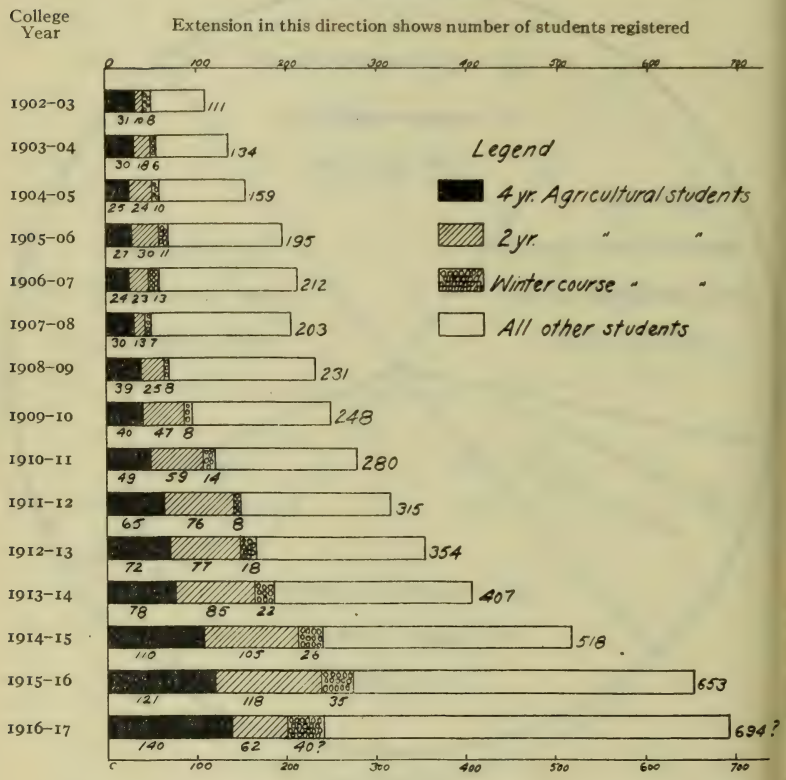
show the "Communities from which students are drawn" and the "Occupations of the fathers."

Largely through the popularity of the courses it offers, the reasonableness of expense, and the influence of its loyal students and alumni, the college itself is the chief factor of attraction, rather than the many outside causes which

might affect the student's choice of any particular institution. This is clearly shown by the chart on page 23.

The growth of the college has been continuous for the

COMPARATIVE ENROLLMENT OF AGRICULTURAL AND OTHER STUDENTS FOR A PERIOD OF FIFTEEN YEARS



? Estimated.

past fifteen years. How phenomenal the increase in numbers has been recently is shown by the chart on this page.

Bearing in mind these significant facts concerning the registration figures of the present year, the prospective

student is requested to examine well the excellent opportunities which New Hampshire College presents, before deciding what institution to attend. Its doors are open to every graduate of New Hampshire's approved preparatory schools. Its courses prepare for a wide choice of life's activities. Its aim is to guard well the student's best interests while in attendance here, and it is mindful of his welfare after graduation. To the student desiring the best in the quality of preparation, at a reasonable cost, this institution will especially appeal.

BUILDINGS AND EQUIPMENT.

BUILDINGS.

The college is housed in thirteen large buildings scattered over a handsome campus. Of these buildings, six are devoted to offices, recitation rooms or laboratories; one is the large armory and gymnasium; three are dormitories for women; one the new dormitory for men, one the library, containing the books of the college and the town of Durham, and one the home of the experiment station. Besides these there are the college barn, several smaller barns, an insectary, a poultry laboratory, poultry houses, and a range of greenhouses.

Dormitories for Women.—Smith Hall was made possible by the generosity of Mrs. Shirley Onderdonk, of Durham, who gave $16,000 as a memorial to her mother, Mrs. Alice Hamilton Smith. The remainder of the cost, $10,000, was provided by the state. The building has rooms for 32 girls, and dining accommodations for 75.

Ballard and Bickford Halls were formerly fraternity houses. They have been acquired recently by purchase and lease, remodeled, entirely refitted, and furnish accommodations for 60 girls.

Each dormitory has a large reception room for social use. A competent matron is in charge of each building.

Fairchild Hall.—One of the latest additions to the college buildings is the $60,000 dormitory for men. This building, named in honor of the late president of the college, is a handsome brick structure of colonial design, which furnishes accommodations for 106 men.

No item of necessary dormitory equipment has been forgotten. There are shower baths on each floor and some suites have private toilets. A large general assembly room has been provided for the use of the occupants of the

building. The student rooms are furnished, heated and lighted and are cared for by a competent assistant. They are arranged mainly in suites consisting of chamber and study.

Thompson Hall is the main administration building and from its eminence commands a view of the entire campus. It contains, besides recitation rooms, the offices of the president, dean, registrar, business secretary, bookstore, and headquarters of the departments of modern languages, English, education and psychology, zoölogy, economic entomology, and home economics. The gymnasium for women is also in this building.

Conant Hall is devoted exclusively to the department of chemistry. The second floor, containing lecture rooms and three laboratories, remains substantially as it has been for a number of years. The first floor has been recently fitted up with modern chemistry desks and other equipment to supply much needed additional laboratory facilities for chemical students. The building is thus well equipped for carrying on the chemical courses of the college, including those connected with chemical engineering, agriculture, and home economics.

DeMeritt Hall.—The engineering building is the most prominent of the engineering group and houses the departments of mechanical engineering, electrical engineering, physics, drawing and mathematics. It contains lecture, recitation, drawing, and office rooms for the several departments; also numerous electrical, mechanical and physical laboratories, each one adapted to and equipped for its specific work.

The Library.—In accordance with an act of consolidation between the libraries of Durham and the college, the books of the Durham public library and the college are all shelved in one building, forming the Hamilton Smith Public Library. This consolidation makes an especially good collection, the scientific books of the college

supplementing well the more popular books of the town library. The consolidated libraries number about 33,000 volumes and the reading room is supplied with 84 periodicals. The departments of sociology, of history and political science, and of economics are located in the library building.

Aside from the main library, each department has its working library of the more technical books and journals.

The library as a whole subscribes for 230 periodicals; 84 of them, non-technical in character, are kept in the periodical and children's rooms; the rest, in the various departmental libraries. Nine daily papers and 26 weekly papers are received by the library.

Morrill Hall is the headquarters of the agricultural division of the college and also has the office of the director of the experiment station and the experiment station library. In this building are the laboratories and lecture rooms of the departments of agronomy, animal husbandry, horticulture, poultry husbandry, and forestry. The building also contains a collection of farm implements and a cattle judging room. The third floor provides quarters for agricultural extension workers, a reading room for agricultural students and The Agricultural Club Room.

The Armory contains the lecture rooms and offices of the military department, the rooms of the College Club and a large drill hall and gymnasium.

The Dairy Building is well arranged and equipped for purposes of dairy instruction. It contains a commercial creamery, with sanitary milk room, separator room, churning room, and cold storage room; laboratories for instruction in milk testing, milk inspection, farm butter and cheese-making, and bacteriology; a reading and exhibition room; class room, and offices.

Nesmith Hall is occupied by the departments of chemistry and botany of the experiment station and contains the laboratories of the department of botany of the college.

The Shop Building contains a wood shop, a machine shop,

a forge shop, a foundry, the boiler house, and a general repair shop connected with the curator's department.

Locker rooms with lockers are provided for use of students taking subjects in shop work.

EQUIPMENT.

Agronomy.—For the teaching of farm equipment and machinery, this department is provided with drainage levels for laying out drains, plane tables for making farm maps, polar planimeters for measuring plotted areas, a dynamometer and several other pieces of apparatus for studying draft problems. For farm crops work it has a very complete collection of dried specimens of the different forage crops, and the more important varieties of corn, wheat and oats. Seed testing apparatus, grass charts and other illustrative material form a part of the equipment.

The lecture room is equipped with a combined lantern and reflectoscope, together with a large number of lantern slides.

The soil physics laboratory contains soil bins, a compacting machine, chemical and torsion balances and various kinds of physical apparatus for the study of soils, including that for the determination of specific gravity and for the making of mechanical analyses.

The agricultural museum contains the old original "Daniel Webster plow" and other primitive models. It also contains many of the latest types of farm machinery, including plows, cultivators, harrows, mowers, planters, corn and grain binders, a thresher, manure spreader, different kinds of cattle ties, various makes of woven wire fences, etc.

The college farm, with its 500 acres of land, has a variety of soils suited for the growth of various farm crops. Land on nearby farms is rented for the growing of corn and potatoes so that good opportunities are afforded for practical work and demonstration in the production of field crops.

Animal Husbandry.—For the various courses in animal

husbandry an extensive use is made of the live stock of the college farm. The dairy herd consists of representative animals of the following breeds: Ayrshires, Guernseys, Jerseys and Holsteins. The college owns nine horses representing the draft type, and in order to become acquainted with the carriage and roadster types, the students are taken to various stock farms where these types may be inspected and judged. For the study of the different breeds of sheep, the experiment station flock is used. For the study of swine students are taken to nearby farms, since at the present the college owns no swine.

In the agricultural building a large room is fitted up for the judging of live stock, and score cards with a scale of points for each kind of animal are used.

The class room is provided with a stereopticon lantern and a large collection of lantern slides is used to show the leading individuals of the different breeds of live stock. The herd books of the most prominent breeds are used for the purpose of familiarizing the student with methods of tracing pedigrees and the practices of breeders' associations.

Botany.—The department of botany has the usual laboratory equipment to meet the needs of the courses in general botany, plant physiology and bacteriology. In the advanced courses, owing to the connection of the department with the experiment station, students will find both the laboratory and greenhouse equipment ample for critical studies on plant diseases and plant nutrition.

Chemistry.—The several chemical laboratories are fairly well equipped. Each is supplied with most of the forms of apparatus required for its particular work. Besides all necessary glass and porcelain ware, this includes water baths, drying ovens, combustion, muffle and assay furnaces, platinum dishes and crucibles, polariscope, spectroscope, balances, lantern and other lecture appliances.

Dairying.—The dairy department, with its new dairy building, offers excellent opportunities for instruction in

technical and practical dairy work. The college creamery is well equipped with up-to-date machinery, each machine being run by a separate electric motor.

In addition to the product of the college herd, milk and cream are received from over forty farms in Durham and vicinity. By this arrangement sufficient material is furnished for practical work. The farm dairy room is equipped with the leading makes of hand separators, and hand and small power churns suitable for private dairies. The milk testing and milk inspection laboratory is equipped with Babcock testers, sediment testers, acidimeters and other apparatus necessary for the testing and inspection of milk and cream. The bacteriological laboratory has the equipment necessary for work in dairy bacteriology.

Drawing.—The department of drawing is well equipped to meet the needs of the subjects offered. The drafting rooms are supplied with tables and lockers and the free-hand drawing studio with suitable stands and easels. For engineering and machine drawing there is an excellent collection of working models and machine parts, and various machines in other departments are available for this work. For free-hand drawing there is a good supply of geometric models, and for advanced work in charcoal drawing the nucleus of a good collection of plaster casts exists, consisting of historic ornament, details of plant and animal life and of the human form. For special work in this subject there is available the museum of casts, consisting of examples of antique and modern sculpture.

Electrical Engineering.—The laboratory for electrical engineering occupies the ground floor of the south end of the new engineering building. It has a total area of about 4,500 square feet. There is one room 104 by 36 feet for dynamo electric machinery. In this main dynamo room there is a large new distributing switchboard, on which are mounted instruments, switches, circuit breakers, ground detectors, synchronizers and plugging devices so arranged that it is possible to connect the various rooms and convey

thereto direct current and single, two-phase and three-phase alternating current of different voltages and frequencies.

In addition to this main dynamo room there is a room used for photometry, one for storage battery and one for high potential experiments. The laboratory also includes an instrument room, a mechanician's room and a dark room.

The general equipment of the laboratory includes various dynamos and motors for both direct and alternating currents, several transformers, the necessary measuring instruments and storage batteries, adapted to the needs of students taking this course.

During the current year the department has received as a gift from the Sears, Roebuck & Company of Chicago, Ill., one electric light plant consisting of engine, dynamo, switchboard, and storage battery. The department has also received as a gift from the Domestic Engineering Company, one of the Delco-light sets including engine, dynamo, switchboard and storage battery. Both of these plants are of the 32-volt type adapted for isolated plant work. These plants are available for demonstration, also for laboratory experiments.

In addition to the regular laboratory equipment, there is available for testing purposes a fully equipped sub-station having a capacity of 75,000 watts supplied by the Rockingham County Light and Power Company, of Portsmouth, N. H. A part of this equipment consists of an automatic induction feeder regulator, including contact making voltmeter and reversing switch.

Farm Department.—New Hampshire College has a large, well-equipped farm. This farm serves as a laboratory for much of the instruction in agriculture where approved methods and practices may be seen and where the students may gain experience by actually performing the work with their own hands.

The college farm proper consists of about 385 acres of which about 100 are in forest and woodland; about 45 are occupied by the campus and athletic field; about 95 are tillage land, and about 145 are pasture land. A part of

both the pasture and tillage land is utilized by the agronomy, horticulture, and animal husbandry departments of the experiment station. Small tracts of suitable land on adjoining farms are also rented for experimental purposes.

A new farm of 120 acres adjacent to one corner of the college farm and having a complete set of buildings, has just been purchased primarily for the Department of Horticulture. This farm contains one of the best orchard sites in this part of the state, also about 20 acres of forest and about 50 acres of pasture.

The farm buildings consist of a large dairy barn, a horse barn 36 x 68 with basement and hay storage loft, two sheep barns, and two general storage barns. The dairy barn has two 125-ton silos, storage capacity for about 120 tons of hay, and a well-appointed, sanitary stable accommodating 40 cows and the usual complement of calves and yearlings. A building 16 x 18 with individual yards has been erected for housing the herd bulls.

Forestry.—The demand for instruction in forestry at the college has been increasing from year to year and the legislature of 1911 provided for a separate department of forestry. The course is intended to provide not only a special training in forestry, but a broad general training in other lines of agriculture closely related to it. For those who desire to make forestry their life work, every encouragement and assistance will be given. Additional work at some graduate school of forestry is now almost a necessity, owing to the large number of men entering the profession today.

Durham is well situated with reference to the study of woodlot forestry. All types of native second-growth forests are found nearby and the college owns a tract of 60 acres of old-growth timber where exceptional opportunities are given for the study of mature forests. There are other areas where practice will be given in establishing plantations of forest trees by various methods. A nursery for the growing of seedling forest trees has been established.

All the necessary instruments for making forest maps and measurements, together with collections of wood specimens, lantern slides and photographs, are available in connection with this work.

Home Economics.—The home economics department is located in two large rooms in Thompson Hall. The food laboratory is fitted with work desks, storage cupboards and apparatus for cooking. The desks are built in cabinet form to hold the necessary utensils and materials for each student. Each table is fitted with both gas and electric stoves and ovens.

The cooking utensils are of the materials best suited to the use of each. Standard measuring apparatus and scales are provided.

A storage cabinet is provided with bins for supplies and cupboard space for large utensils.

The sewing equipment consists of sewing machines, cabinets, tables, and dress-forms.

Various educational exhibits, both food and textile, are owned and used by the department for illustrative purposes.

The reference library of books, bulletins and journals is deposited partly in this room and partly in the main library.

Mechanical Engineering Department.—The main office of the Mechanical Engineering department is located on the second floor of DeMeritt Hall. On this floor is the drafting room equipped with twenty-four drafting tables, where the advanced work in drawing and design is given. In addition there are two lecture rooms with a seating capacity for twenty-five students, one of the lecture rooms being equipped with a stereopticon lantern and screen so that illustrated lectures may be given in various subjects.

In the basement of the building is located a Mechanical Engineering laboratory, the north end of which is given over to a stock and instrument room and a materials testing room. This latter room contains a 50,000-pound Riehle tension testing machine, a machine for transverse testing materials, a Fairbanks cement testing machine, a chemical

balance and instruments for making analytical tests of fuel, oil, and gas.

The main room is given over to steam, gas, and hydraulic testing. The present equipment consists of a 12-horse power 4-cycle gasolene engine, a 5-horse power 2-cycle gasolene engine, 2 5-horse power 4-cycle gasolene engines, Westinghouse air compressors, condenser and pumps, a Westinghouse single acting steam engine, a 10-horse power high-speed steam engine, a wier tank, platform scales and tanks for weighing of water, four motor meters for comparison and testing, a rotary pump of 100 gallons per minute capacity, steam drums for testing gages, indicator springs, thermometers, and calorimeters. This equipment will be added to from time to time. In addition to this equipment there is a supply of steam engine indicators, gas engine indicators, gages and thermometers, pyrometers and other small apparatus.

Military Department.—This department is in charge of an officer of the United States regular army, detailed by the War Department, as a professor of military science and tactics. Military instruction, which is required by law, is both theoretical and practical, the former having special reference to the duties of the line.

The organization is a regiment of two battalions of three companies each, having a band, and officered by cadets selected for character, soldierly bearing, and efficiency. The federal government has furnished U. S. magazine rifles, model 1898, and equipment, to be changed this year to 1903 model rifle and equipment. Attention is paid to rifle practice, the government supplying ample ammunition and target materials, and the college a range within four minutes' walk of the college buildings, with firing points at 200 and 300 yards. The rolling country in the vicinity of the college furnishes opportunities for extended order drill and field exercises, the athletic field for close order drills, and the gymnasium gives room for indoor work.

The cadets wear, when on duty of a military character,

an olive drab cloth uniform as prescribed by standing orders of the War Department, furnished by the government to students in four-year courses. The cost of the uniform to other students cannot be estimated at present on account of the frequent changes in price of supplies of this character at the present time. In the past it has been about twenty dollars.

Service in this department for juniors and seniors is limited to those men who are selected for further training by the President of the College and the Professor of Military Science and Tactics. Those so selected who agree to continue in the department for the remainder of their college course, and to pursue the subject in camp training prescribed by the War Department, receive from the government pay at the rate of the allowance for commutation of rations for the regular service.

Upon graduation of each class the names of those students who have shown special aptitude for military service are reported to the adjutant-general of the army, and to the adjutant-general of the state, and they receive a special certificate for military proficiency.

Physics.—Besides the necessary furniture the department is supplied with the usual small tools, calipers, scales, balances, weights, hydrometers, calorimeters, thermometers, etc., and with other apparatus for the performance in the laboratory of experiments in mechanics, heat, sound, light, magnetism and electricity.

The lecture room has a small but growing collection of apparatus for the illustration, both experimentally and with the projection lantern, of the laws of matter and energy in their various relations, and of the history of physics.

Instruction is carried on by means of lectures, with stencil outlines furnished to students and constantly kept up to the development of the subjects; recitations and discussions based on standard text-books, and experimental work in the laboratory. Stencil outlines are furnished for the laboratory experiments, with concise directions

and references; and reports are written by the students on the results of their experiments, for examination and criticism by the teacher.

The physics department occupies most of the west end of the new engineering building. In the basement there are a large laboratory room for work in subjects yet to be developed, two small rooms for individual work, a switchboard room, a room for storage battery and for chemical work, and a storage room. On the first floor are the general laboratory, partly divided off into small rooms for work in light or for balances, a room for apparatus storage, the office and a recitation room. On the second floor are the lecture room and a room for the storage of lecture apparatus. The lecture room will seat about one hundred.

Poultry Husbandry.—The demand for poultry has been increasing from year to year. The work of the department was made possible by an act of the legislature in 1913.

The funds thus appropriated have been used toward the building of a poultry plant.

The buildings consist of a permanent long house and several colony houses. These furnish capacity for about 500 birds.

Four breeds of poultry are kept, namely, Barred Plymouth Rocks, Rhode Island Reds, White Leghorns, and Light Brahmas.

Students are given work in incubation, house construction, judging, killing and dressing.

Shopwork.—The wood shop is equipped with thirty-three benches and complete sets of tools for 160 students. Each bench is equipped with modern vises. Other equipment consists of a universal pattern maker's saw, board-planer, buzz-planer, band saw, speed-lathes and a large pattern maker's lathe with boring attachment.

The equipment of the machine shop consists of engine lathes, speed-lathe, vertical drill, planer, large universal milling machine, plain milling machine, shaper, power hack saw, tool grinder, twelve benches with vises and bench

lathes; and a large number of small tools, including micrometers, calipers and gages necessary for accurate work.

In the forge shop are seventeen Sturtevant down-draft forges with anvils and necessary tools. The blasts to the forges is furnished by a No. 4 blower, and the smoke carried away by a 60-inch exhauster. These are driven by a small steam-engine.

All the shops are operated by 550-volt three-phase induction motors, suitably connected to line shafting and driving the tools by the "group plan."

Zoölogy.—This institution is favorably situated geographically for the study of zoölogy. Within a few minutes' walk of the laboratory, the Oyster river meets the tide water from Great Bay. This furnishes a gradation of salt, brackish and fresh water with an abundance of their characteristic fauna. Great Bay, the Piscataqua river and the open ocean are within easy access, and have their own peculiar, characteristic forms. On the other hand there are numerous bodies of fresh water, with typical fresh water forms.

The department of zoölogy is prepared to offer courses along the following lines: (A) systematic zoölogy; (B) physiology and sanitation; (C) philosophical zoölogy; (D) anatomical zoölogy.

The equipment for the work in systematic zoölogy consists of a well-lighted laboratory, provided with tables, charts, dissecting and compound microscopes. All of the latest books and periodicals on systematic zoölogy are at the student's disposal. The lecture room is fitted with a new reflectoscope capable of projecting opaque objects, text-book figures or lantern slides. The room has a seating capacity of eighty, and is provided with tablet armed chairs which enable the students to readily take down notes and drawing. There is a fairly complete collection of local invertebrates, and a very good collection of the birds of New Hampshire. The work in systematic entomology is greatly aided by a large and complete collection of insects which is the property of the experiment station.

The proximity to both salt and fresh water renders the work in advanced systematic zoölogy unusually attractive. In addition to the regular collecting equipment, nets, aquaria, etc., advanced students also have the use of row-boats and a gasolene launch.

In the work in physiology, hygiene and sanitation, the department is provided with an unusually fine collection of injected preparations of the human body, and with numerous charts. The same laboratory and equipment is used in this work as noted above.

For work in evolution and experimental zoölogy the department has a very complete library. Studies in ecology in Great Bay and vicinity are encouraged, for which purpose the students have the use of a camera equipment. In addition to the study of evolution under natural conditions the department also furnishes aquaria for laboratory study and experiments.

The work in anatomical zoölogy is greatly facilitated by an abundance of fresh material which may be collected as needed. For the study of human and comparative anatomy a full set of skeletons and preserved material is provided. Students interested in histology have access to a private collection of some two thousand microscope slides.

Museum.—The museum had for a nucleus the collection made during the state geological survey. To this additions have been made from various sources. Specimens are being collected to illustrate the zoölogy of New Hampshire, and New Hampshire collectors and naturalists are invited to make the museum the permanent depository of their collections.

FOUR-YEAR COURSES.

AGRICULTURAL DIVISION.

The courses of this division are designed for the general education and scientific training of students in the various economic branches of agriculture. The lecture and recitation work of the classroom is supplemented largely by practical exercises in the laboratories. Seminar studies are also given, especially for seniors and advanced students. During junior and senior years the student has elective options in certain courses of study which enable him to specialize in animal husbandry and dairying, horticulture, forestry or general agriculture.

While the two-year course is intended to give the student as thorough training in the science and practical details of farm operations as the time will allow, it does not give the opportunity for a broad general foundation of pure and applied science that the four-year courses afford; the latter courses aim primarily to combine a college education with that of a technical vocation. Many of the graduates of the four-year courses return to the farm for the purpose of putting into practice the knowledge and training of their college work, and many of them are becoming successful and prosperous citizens of the community; others who have no farms of their own accept salaried positions as superintendents or foremen on the dairy, fruit or truck farms of large owners; still others take positions as teachers of science and agriculture in our secondary and high schools or as assistants in our agricultural colleges and experiment stations.

The Agricultural Division offers the following four-year courses of study:

Animal Husbandry and Dairy Course.—This course is designed for those students who wish to specialize either

in animal husbandry or dairying. Election of subjects between these two departments may be made throughout the junior and senior years. The dairy building with its new and complete equipment, together with the additional subjects and increased facilities for instruction in the animal husbandry department, make this course especially attractive.

Forestry Course.—The forestry course offers to students who have entered the agricultural division an opportunity to specialize in forestry during the junior and senior years. This arrangement allows the student to devote a large amount of time to the various branches of forestry, but at the same time requires a foundation of agriculture and the subjects upon which agriculture depends. The forestry department is located on the second floor of Morrill Hall. The college forest of sixty acres of old-growth pine and hemlock, and other areas of natural and planted growth, furnish the laboratory for the forestry student. Ample opportunity is given to study the various forest problems on the ground as well as in the classroom.

Horticultural Course.—This is the course for those students who contemplate making a speciality of some line of horticultural work. Several advanced subjects in botany will be required, while during the senior year opportunity will be given to elect subjects in other departments. The horticultural department is well equipped with gardens, orchards, greenhouses and laboratories for the study of the different phases of this industry, especially fruit growing, which is so prominent in the agriculture of the state.

General Agriculture or Teaching Course.—This course is intended for students who desire to secure a general training in the science of agriculture without specializing along some particular line. Provision is made during both the junior and senior years for the student to elect one or more subjects in whatever department he wishes.

The rapidly increasing demand for teachers in agriculture in our secondary schools has indicated the necessity of training men especially for this important line of work.

Eight hours of work in the department of education are required during the junior year and five hours during the senior year of all students in the General or Teaching Course in Agriculture.

ARTS AND SCIENCE DIVISION.

In the Arts and Science Division the following courses are offered:

General Arts and Science Course.—This course provides a general college training which especially prepares for secondary school teaching, business or graduate study. By means of the group system of elective studies an opportunity is given the student to specialize in zoölogy, botany, chemistry, physics, drawing, agriculture, mathematics, modern languages, English, psychology, sociology, political science, economics, history, home economics, and education.

Home Economics Course.—The course in home economics furnishes instruction in the branches that especially serve the need of women students. The work is planned to meet the demands of the day for scientific training in home making, to fit students to enter fields of professional activity in educational and institutional lines of work, and to provide thorough training for those students who wish to elect home economics as either a major or a minor subject in the Arts and Science Course.

The technical work in household science is based upon the principles of physical, biological and social sciences. The subjects in foods, nutrition and dietetics require physics, chemistry and physiology; those in sanitation necessitate a knowledge of chemistry and bacteriology; home administration and the care and education of children, a knowledge of the principles of human nutrition and dietetics, principles of economics, psychology and sociology. The training in drawing, color, and design which is gained in the department of drawing is related to the work in costume design and house decoration.

By the arrangement of studies, electives have been pro-

vided for in each year. The student is permitted three elective hours of work in the freshman year, five in the first half and six in the second half of the sophomore year, while more than half the total requirements for junior and senior years are electives. This large amount of elective work affords ample opportunity for the study of modern languages, history, mathematics, social and political sciences, or subjects of interest to women in other departments of the college. Provision is made for original problems in the senior year for students who are prepared for such studies.

Mechanic Arts Course for Teachers.—This course provides an opportunity for preparation for the teaching of Mechanic Arts and manual courses in secondary schools and institutions. It originated to meet the increasing demand for graduates of the college qualified to teach manual and mechanic arts courses. Although much of the work of this course is necessarily prescribed in such subjects as drawing, mathematics, shop work, English, psychology and education, a reasonable opportunity is given the student to elect other subjects in the Arts and Science Division. At the present time the demand for graduates from this course for secondary teaching is greater than the college can satisfy.

ENGINEERING DIVISION.

Chemical Engineering Course.—This course is intended to fit for the career of professional chemist or chemical engineer, and to give a good foundation for original and independent chemical research.

Instruction is imparted by lectures, recitations and a large amount of carefully supervised laboratory work. The laboratory study is largely an individual one and the work of each student is conducted with reference, not only to the particular object he may have in view, but also to the acquirement of a broad knowledge of chemical science. The student is given a thorough training in German and French to enable him to read with ease the chemical literature; a

thorough grounding in mathematics, necessary for advanced theoretical chemistry or chemical engineering; a somewhat limited amount of special engineering work, both mechanical and electrical; and a thorough undergraduate training in theoretical and applied chemistry. He is encouraged to develop the power of solving chemical problems by independent thought through the aid of the reference works and chemical periodicals which the library contains.

Electrical Engineering Course.—The electrical engineering course is intended to meet the demands of young men fitting themselves for practical and professional engineering in connection with the various applications of electricity.

By means of lectures, recitations and laboratory work, the subjects of the course are brought to the attention of the student in such a manner as to not only emphasize the present needs of the practitioner and engineer, but to give him the groundwork that will enable him to grasp and understand the constantly increasing number of problems that require solution.

The instruction aims to impart a complete practical and theoretical knowledge of the best modern types of electrical machines and appliances and the methods of designing, building and operating them.

The rapid progress in recent years in applying electricity to commercial uses renders it difficult, if not impossible, for one without a technical education to gain prominence in the work and be intrusted with its more responsible positions.

Mechanical Engineering Course.—The mechanical engineering course is intended to train young men for positions of responsibility in the field of the mechanical industries. The studies in the course are scientific, including mathematics, physics and chemistry; technical, including drawing, shop work, thermodynamics, hydraulics, machine design, electrical engineering, power engineering, and cultural studies, calculated to enable the technical man to take his proper place in the world of men.

Instruction is given by means of text-book work and laboratory work whenever possible. When necessary this work is supplemented by illustrated lectures and assigned reading. Throughout the course the theoretical work is supplemented by actual practice in mechanical operation and scientific research, by training in the use of tools for working wood and metals, and by experimental tests and demonstrations in the mechanical, chemical and physical laboratories.

POST-GRADUATE AND SPECIAL COURSES.

The college offers opportunity for post-graduate study in agriculture, biology and chemistry, and on the completion of satisfactory work advanced degrees will be given. Persons of mature years presenting satisfactory evidence of their ability to complete any desired course of study may be admitted as special students by vote of the faculty.

METHODS OF ADMISSION.

New Hampshire College will admit without examination all candidates for admission who are graduates of high schools or academies of New Hampshire that are approved by the State Department of Public Instruction, provided the division entrance requirements of the college be met.

Graduates of schools specially approved by the college, will be admitted on the same terms as graduates of approved schools in New Hampshire.

Graduates of other high schools and academies will be admitted on passing examinations in fifteen units. However, the college can not agree to give examinations in certain vocational subjects involving mainly practical work, but may require special certification in such subjects.

Cases not covered by the above statements will be decided by the entrance committee of the faculty.

Candidates for advanced standing are admitted on the basis of the work completed at the institutions from which they come.

DIVISION UNIT REQUIREMENTS.

There are three divisions of New Hampshire College; the Agricultural, the Arts and Science, and the Engineering. These divisions are defined and described elsewhere in this announcement.

An entrance unit represents one study of four or five recitations a week for one year. It is assumed that two hours of manual training or laboratory work are equivalent to one hour of classroom work.

Candidates for admission to the freshman class of the various divisions of the college must show evidence, either by credentials or by examination, that they are prepared in fifteen units as indicated in the following table:—

Required Units		Agricultural Division.	Arts and Science Division.	Engineering Division.
Group A	English,	3	3	3
Group B	Mathematics,	2	2	3
Group C	Social Science and History,	1	1	1
Group D	Natural Science,	1	1	1
		7	7	8
Elective Units		8	8	7
Total for admission,		15	15	15

Elective units may be offered from groups A, B, C, D, and also from

Group E Foreign languages, ancient or modern.

Group F Vocational subjects: agriculture, commercial subjects, domestic arts, mechanic arts.

However, not more than four vocational units will be accepted.

The credentials to be rendered by principals must state the time of graduation, the subjects studied, the number of entrance units in each, the grades attained by the student, and the passing grade of the school.

The credential forms to be used will be furnished by the college on application to the registrar.

The study of algebra and plane geometry may be com-

bined as in Myers' textbook provided two units are offered for the combined work.

A candidate for admission to the Arts and Science Division who offers two units in a foreign language may substitute for the two units required in mathematics two units in either social or natural science, or one in each.

Candidates for admission to the Engineering Division may offer solid geometry for a part of the additional unit in mathematics. This is not required, but is highly advisable. Students presenting solid geometry as a part of the fifteen units required for entrance will be obliged to take an equivalent in hours for solid geometry (Mathematics 53). Students presenting solid geometry in addition to the fifteen units required for entrance may obtain credit for solid geometry (Mathematics 53), by passing a thorough examination. For the required unit in natural science, physics or chemistry is advisable.

Entrance by Examination.—Examinations will be given in subjects named in the groups A–F, in June and September at the college and in June at the following places also: Keene, Laconia, Lancaster, Manchester, West Lebanon.

Competitors for the Valentine Smith Scholarship (see page 48) must take the examinations in English, American History, Algebra through quadratics, plane geometry and either physics or chemistry. These examinations must be taken in June, and may be taken at any one of the places mentioned above.

Requests for examinations should be forwarded to the Dean of the College at least one week before the beginning of the examination period, and must state the names and addresses of the students, the places at which they will present themselves, and the examinations desired.

SCHEDULE OF EXAMINATIONS.

Tuesday, June 26, 1917.
Tuesday, September 11, 1917.

8:00	Mediaeval and Modern History	1:30	English
10:00	Elementary Algebra	3:30	Elementary Latin

Wednesday, June 27, 1917.
Wednesday, September 12, 1917.

8:00	Chemistry	1:30	Plane Geometry
10:00	Physics	3:30	Advanced Latin

Thursday, June 28, 1917.
Thursday, September 13, 1917.

8:00	English History	1:30	French
10:00	American History	3:30	Advanced Algebra

Friday, June 29, 1917.
Friday, September 14, 1917.

8:00	Ancient History	1:30	German
10:00	Solid Geometry	3:30	Botany

Examinations not scheduled may be arranged.

ENTRANCE REQUIREMENTS.

GROUP A. ENGLISH.

The examination paper in English will be based upon the principle that the way to learn to write is to read.

All candidates will therefore be required to write a series of short themes which will show an adequate knowledge and thorough appreciation of certain great English classics as literature—as "the life blood of the mind." The classics selected are as follows: Shakespeare's Merchant of Venice, Henry V, and Macbeth; one novel each by Scott, Dickens, George Eliot, Stevenson, Cooper and Hawthorne; one essay each by Macaulay, Ruskin and Lowell; the subject-matter and nature of the poetry of Wordsworth, Byron, Tennyson, Longfellow and Whittier.

As a special test in spelling, grammar, punctuation and paragraphing, the candidate will be required to write a short theme upon some subject pertaining to the home or school life of the average high school senior.

An optional question will be offered for the purpose of discovering the candidate's familiarity with the best modern periodical literature.

GROUP B. MATHEMATICS.

1. **Elementary Algebra.**—The four fundamental operations for rational algebraic expressions. Factoring, determination of highest common factor and least common multiple by factoring. Fractions, including complex fractions, and ratio and proportion. Linear and quadratic equations, both numerical and literal. Problems depending on linear and quadratic equations. Radicals, including the extraction of the square root of polynomials and of numbers. Exponents, including the fractional and negative.

2. **Advanced Algebra.**—The formula for the *n*th term and the sum of the terms of arithmetical and geometrical progressions, with applications. The theory and use of logarithms, without involving the use of infinite series. The binomial theorem for positive integral exponents. Complex numbers, with graphical representation of sums and differences. Determinants limited to simple cases. The elements of the theory of equations.

3. **Plane Geometry.**—The usual theorems and constructions of good textbooks, including the general properties of plane rectilineal figures; the circle and measurement of angles; similar polygons; areas; regular polygons, and the measurement of the circle. The solution of numerous original exercises including loci problems. Applications to the measurement of lines and plane surfaces.

4. **Solid Geometry.**—The usual theorems and constructions of good textbooks, including the relations of lines

and planes in space; the properties and measurement of prisms, pyramids, cylinders and cones; the sphere and the spherical triangle. The solution of numerous original exercises including loci problems. Applications to the measurement of surfaces and solids.

5. **Plane Trigonometry.**—The subject matter of plane trigonometry as presented in good textbooks, including the solution and use of trigonometric equations of a simple character, the use of logarithms, the solution of right and oblique triangles, and practical applications.

6. **Review Mathematics.**—A general mathematics review during half of senior year is recommended, especially for students preparing for college engineering courses. A certificate covering the work of not more than one unit will be accepted for entrance. No examinations will be given.

GROUP C. SOCIAL SCIENCE AND HISTORY.

This group includes history, political economy, and commercial law.

Although there are excellent textbooks in history, and adequate preparation cannot be obtained by textbook work alone. Some collateral work is necessary, whatever textbook is used, and with certain textbooks a large amount is necessary. The details of the preparatory work in history are fully stated in A History Syllabus for Secondary Schools, by the New England History Teachers' Association. Boston, D. C. Heath & Co., 1904. Details are also stated in Standard Program for the Secondary Schools of New Hampshire, Department of Public Instruction, Concord, N. H.

1. **Ancient History.**—This may include the earliest nations and the period to 800 A. D., or it may be limited to Grecian History and Roman History to the fall of the Western Roman Empire.

2. **Mediaeval and Modern History.**

3. **English History.**

4. **American History and Civics.**—The work may conform to the course in American constitutional history described in the Standard Program or to the course in American history developed in nearly a hundred pages of the Syllabus. It is assumed that in any case a reasonable amount of time is to be given to the study of the Constitution of the United States.

5. **Political Economy.**—(1) The study of a standard text. (2) At least six topics investigated by outside reading.

6. **Commercial Law.**—(1) Study of a standard text. (2) The study of a total of not less than thirty-six specific cases.

GROUP D. NATURAL SCIENCE.

A notebook, carefully kept and examined by the teacher, is an essential part of all laboratory work in science.

1. **Botany.**—The work in botany should consist of (1) the study of a standard text; (2) four or five exercises per week, at least one of which should be laboratory work. Either half of a year or an entire year's work will be accepted.

2. **Chemistry.**—Elementary inorganic chemistry. Should cover the commoner nonmetallic and metallic elements with their most important compounds, together with an introduction to the general theoretical principles. Calculations based upon changes of gaseous volumes and chemical equations. A year's work of four or five exercises per week, at least one of which should be laboratory work.

3. **Physics.**—The standard work in physics should consist of (1) The study of a standard text; (2) not less than forty experiments worked out in the laboratory by each student and properly recorded in a suitable notebook.

4. **Zoölogy.**—A study of the fundamental principles of animal structure and the dissection of type forms. The student should become familiar with the characteristics of the various phyla of the animal kingdom. Four or five exercises per week, at least one of which should be laboratory work. Either half of a year or an entire year's work will be accepted.

GROUP E. FOREIGN LANGUAGES.

1. **French.**—Work of the first year should include (1) careful drill in pronunciation, (2) drill upon the rudiments of grammar, (3) abundant translation of simple English prose into idiomatic French, (4) reading of from 100 to 175 pages of French prose, (5) writing French from dictation. Work of the second year should include (1) the reading of from 250 to 400 pages of easy modern prose, (2) constant practice in translating from English into French variations of the text read, (3) frequent paraphrases of the text read, (4) dictation.

2. **German.**—Work of the first year should include (1) careful drill in pronunciation, (2) drill upon the rudiments of grammar, such as the inflection of the articles, the common nouns, adjectives, pronouns, and strong and weak verbs, upon the uses of the prepositions, the modal auxiliaries, and the rules of syntax and word order, (3) writing from dictation, (4) the reading of from 75 to 100 pages of prose, (5) translation from English into German. Work of the second year should include (1) the reading of from 150 to 200 pages of prose, (2) constant practice in translating from English into German variations of the text read, (3) dictation, (4) continued drill upon the rudiments of grammar, (5) frequent paraphrases of the text read.

3. **Latin, Elementary.**—Grammar and four books of Caesar. Two years' work.

4. **Latin, Advanced.**—Virgil, six books. Cicero, six orations.

GROUP F. VOCATIONAL SUBJECTS.

1. Agriculture.

Agronomy.—A textbook or lecture and recitation subject upon the formation, classification, composition, physical properties and tillage of soils; the kinds, use, value, and function of different chemical fertilizers; the use, composition, and preservation of farm manures; the planting, cultivation, harvesting, use, and marketing of the different kinds of field crops. The textbook and lecture work should be supplemented by field and laboratory exercises. Four or five periods per week for one year.

Animal Husbandry and Dairying.—A textbook and recitation subject upon the types and breeds of horses, cattle, sheep, swine, and poultry with practical exercises in stock judging; a study of the principles of feeding, the classification of animal foods, with practice in computing and mixing rations. Also a subject upon the composition, properties, care and handling of milk, with practical exercises in testing milk, cream, and butter with the Babcock test. Four or five exercises per week for one year.

Horticulture.—A textbook or lecture and recitation subject upon the classes and varieties of fruits; the location and fertilization of orchards; the pruning, grafting, and spraying of fruit trees, with some study of fungous and insect pests. Practical exercises in picking, packing, and marketing of fruit. Also a study in vegetable growing in which each student learns the classes, varieties, uses, and adaptations of our most important vegetables. Practical gardening work in growing vegetables. Four or five exercises per week for one year.

Rural Economics and Farm Management.—A textbook, lecture and recitation subject upon the economic relations of land, labor, and capital. A detailed study of the cost of producing and marketing farm and garden crops. Also a study of the business end of farming, buying and selling methods, types of farming, systems of rotation, the keeping

of farm accounts, and the making of inventories. Four exercises per week for one year.

2. **Commercial Subjects.**—Bookkeeping, commercial arithmetic, commercial geography, stenography, and typewriting.

3. **Domestic Arts.**—Foods and cookery, dressmaking, household sanitation and mechanical appliances, household economics, household design and decoration.

4. **Mechanic Arts.**—Casting, drawing, forging, machine work, molding, pattern-making, woodwork.

REQUIREMENTS FOR DEGREES.

ADVANCED DEGREES.

Advanced degrees may be conferred upon candidates who have received the degree of B.S. from this college or any institution of like standing upon the fulfilment of the following requirements:

Degree of M.S.—The successful completion of a course of graduate study pursued in residence and approved by the faculty of the college.

The preparation of an original thesis satisfactory to the faculty of the college.

Degree of M.E.—Professional experience of at least four years.

The successful completion of a course of graduate study approved by the Engineering Division Committee.

The preparation of an original thesis satisfactory to the faculty of the college upon some subject approved by the Engineering Division Committee.

For details concerning the regulations governing the conferring of degrees address Dean C. H. Pettee.

UNDERGRADUATE DEGREES.

The college confers two undergraduate degrees: Bachelor of Science and Bachelor of Arts.

The degree of Bachelor of Science is conferred upon students graduating from the Agricultural Division, from the Engineering Division and upon students graduating from the Arts and Science Division who have elected the Home Economics Course, the Mechanic Arts Course for teachers or who have majored in group 2 of the General Arts and Science Course. The degree of Bachelor of Arts is conferred upon students graduating from the General Arts and Science Course who have majored in group 1 or 3.

Agricultural Division.

The completion of 140 semester hours; for students entering in the fall of 1917 and thereafter, 144 semester hours.

The completion of the studies required in one of the following courses:

(a) Animal Husbandry and Dairying.
(b) Forestry.
(c) Horticulture.
(d) General Agriculture or Teaching.

Students graduating from the four-year courses in agriculture must present to the dean of the division on or before the second Tuesday preceding commencement satisfactory evidence of having had practical experience in farm work, either through having lived on a farm for at least two years subsequent to the age of 12 or through having worked on a farm for at least six months subsequent to the age of 16.

Students graduating from the Forestry Course must have spent at least three months in practical forest work, which time will be counted as a part of the six months requirement.

Arts and Science Division.

(a) General Arts and Science.

1. The completion of 132 semester hours, of which a minimum of 18 shall be required each semester of the freshman year and a minimum of 16 hours each semester thereafter. For students entering in the fall of 1917, and thereafter, 136 semester hours will be required.

2. The completion of English 51 and 52.

3. The completion of the military and physical culture requirements or their equivalent.

4. The completion of major and minor requirements as follows.

The Arts and Science courses are divided into three groups:

Group I.—Languages and Literature: English, French, German, Latin, Spanish.

Group II.—Mathematics and Sciences: Mathematics, Zoölogy, Botany, Geology, Meteorology, Chemistry, Home Economics, Agricultural subjects*, Drawing, Physics.

Group III.—History, Social Science, Education and Psychology: History, Political Science, Economics, Sociology, Education, Psychology.

Group Requirements.

Each Arts and Science student shall elect at least 18 semester hours in each of the above three groups.

Major Requirements.

Each Arts and Science students shall, at the middle of his second year, select a department to be known as his major department.

In this major department, he shall complete 18 semester hours in which he shall make a grade of 70 or better.

In case of departments in which less work is offered than the amount required for the major, the shortage may be made up from such other related departments as the head of his major department may prescribe.

Minor Requirements.

Each student shall, with the approval of the head of his major department, elect for a minor 18 semester hours of subjects related to his major.

Student Advisers.

1. For Freshmen and First Semester Sophomores:

A committee of three faculty members shall be appointed by the dean of the Arts and Science Division to act as advisers for freshmen and first semester sophomores, and the elective slip of each must be approved by a member of this committee.

2. For Second Semester Sophomores, Juniors, and Seniors:

A student shall have for his adviser the head of his major department; provided, that in case a student majors in a department outside the Arts and Science Division, his

*Agricultural subjects as part of minor only.

elective slip shall also be approved by the dean of the Arts and Science Division.

(b) Home Economics.

The completion of 132 semester hours; for students entering in the fall of 1917, and thereafter, 136 semester hours.

The completion of the courses required in the Home Economics branch.

(c) Mechanic Arts for Teachers.

The completion of 140 semester hours; for students entering in the fall of 1917, and thereafter, 144 semester hours.

The completion of the courses required in the Mechanic Arts Course for Teachers.

Engineering Division.

The completion of 148 hours.

The completion of the studies in one of the following branches:

(a) Chemical Engineering.
(b) Electrical Engineering.
(c) Mechanical Engineering.

Additional Hours.

Students desiring to take additional hours, should consult their advisers. The advisers have discretion with regard to two additional hours; more than two are allowed subject only to the approval of a proper division committee.

THESES.

The preparation of a thesis upon some subject connected with the work of the division may be required of candidates for a degree by the division committee.

The subject of a thesis, together with a written approval by the head of the department concerned, must be filed with the registrar within one week of the opening of the second semester. The thesis is to be submitted to the head of the department not later than the second Tuesday preceding commencement day.

It is to be typewritten or printed upon standard thesis paper, eight and one-half by eleven inches, medium weight, and must be neatly bound in black cloth and gilt-lettered on the first cover with title, name of author, degree sought and year of graduation. This bound copy is to be filed and left with the college librarian before commencement day.

SENIOR STANDING AND DEFICIENCIES.

The regular work of the senior class, including the regular final examinations, is completed at 4 p. m. on the Tuesday of the week preceding commencement, and each member of the class will receive a statement of his standing from the registrar before Friday of that week.

All deficiencies must be removed by 6 p. m. of the Saturday of the same week.

COURSES OF STUDY.

(For details, see Description of Studies which follows.)

AGRICULTURAL DIVISION.

All Courses.

FRESHMAN YEAR.

First Semester.	Credit Hours	Second Semester.	Credit Hours
Agriculture, 1 Survey of	1	*Bot. 52*, Gen. Bot.	3
Bot. 51, Gen. Bot.	3	*Chem. 52*, Inor. Chem.	3
Chem. 51, Inor. Chem	3	*Draw. 54*, Agr. Draw.	2
Engl. 51, Comp.	3	*Engl. 52*, Comp.	3
Math. 51a, Alg. and Trig.	4	*Math. 54*, Surveying	2
Mil. Art 1	2	*Mil. Art 2*	2
Zoöl. 51, Gen. Zoöl.	3	*Zoöl. 52*, Sys. Zoöl.	3

SOPHOMORE YEAR.

First Semester.		Second Semester.	
Agron. 51, Agr. Eng.	3	**A. H. 52*, Adv. St'k Judg.	2
An. Husb. 51, Breeds of Live Stock	3	*Chem. 60*, Quant. Anal.	3
Chem. 59, Intro. Qual. Anal.	2	*Dairy 52*, Farm Dairy	3
Ent. 1, Econ. Ent.	3	*Hort. 52*, Veg. Gardening	2
For. 51, Principles of Forestry	3	*Hort. 54*, Pract. Pomology	3
Mil. Art 3	2	*Mil. Art 4*	2
Phys. 51, Mech. and Heat	2	*Phys. 52*, Mag. and Elec.	2
		Poultry 2, Farm Poultry	3

Animal Husbandry and Dairy Course.

JUNIOR YEAR.

First Semester.		Second Semester.	
Agron. 53, Farm Crops	3	*Agron. 52*, Soils	3
A. H. 55, Vet. Anat, *or* *Dairy 53*, Buttermaking	3	*A. H. 54*, Feeds and Feeding	3
Bot. 55, Bacteriology	3	**A. H. 56*, Animal Diseases *or* **Dairy 58*, Cheese Making	3
Geol. 51, Elements of Geol.	3	*Bot. 56*, Bacteriology	3
Shop 55, Forge Work	1	*Dairy 54*, Market Milk	3
Electives	5	*Shop 54*, Wood Work	2
		Electives	2

SENIOR YEAR.

First Semester.		Second Semester.	
Agron. 55, Farm Manag't	3	*Agron. 54*, Fertilizers	3
A. H. 57, Animal Breeding	3	*Econ. 8*, Agric. Econ.	3
Econ. 1, El. Econ.	3	Electives	11
Electives	8		

*Elective.

Forestry Course.

JUNIOR YEAR.

First Semester.	Credit Hours	Second Semester.	Credit Hours
Bot. 53, Plant Physiol.	3	*Agron. 52*, Soils	3
Bot. 55, Bacteriology	3	*Bot. 54*, Plant Histology	3
For. 53, Dendrology	3	*For. 52*, Silviculture	3
For. 55, Silviculture	4	*For. 54*, For. Mensuration	3
Geol. 51, El. Geol.	3	*Hort. 56*, Landscape Gard'ng	3
Electives	2	Electives	3

SENIOR YEAR.

First Semester.		Second Semester.	
Bot. 57, Plant Pathology	3	*Econ. 8*, Agric. Econ.	3
Econ. 1, El. Econ.	3	*For. 56*, Forest Manag't	4
For. 57, Forest Protection	2	*For. 59*, Practice of For.	3
Met. 1	2	Electives	7
Electives	8		

Horticultural Course.

JUNIOR YEAR.

First Semester.		Second Semester.	
Agron. 53, Farm Crops	3	*Agron. 52*, Soils	3
Bot. 53, Plant Phys.	3	*Hort. 56*, Landscape Gard'ng	3
Bot. 55, Bacteriology	3	*Hort. 58*, Nursery Manag't	3
Geol. 51, El. Geol.	3	*Hort. 60*, Floriculture	2
Hort. 53, Greenhouse Manag.	3	*Hort. 68*, Veg. Forcing	3
Shop 55, Forge Work	1	*Shop 54*, Wood Work	2
Electives	2	Electives	2

SENIOR YEAR.

First Semester.		Second Semester.	
Agron. 55, Farm Manag't	3	*Agron. 54*, Fertilizers	3
Bot. 57, Plant Path.	3	*Econ. 8*, Agr. Econ.	3
Econ. 1, El. Econ.	3	*Hort. 62*, Seminar	1
Hort. 55, Sys. Pomology	4	*Hort. 64*, Evol. of Plants	2
Met. 1	2	Electives	8
Electives	3		

General or Teaching Course.

JUNIOR YEAR.

First Semester.		Second Semester.	
Agron. 53, Farm Crops	3	*Agron. 52*, Soils	3
Bot. 55, Bacteriology	3	*An. H. 54*, Feeds and Feeding	3
Educ. 5, Secondary Educ.	3	*Dairy 54*, Market Milk	3
Geol. 51, El. Geol.	3	*Psych. 52*, Intro. to Psych.	3
Shop 55, Forge Work	1	*Shop 53*, Wood Work	2
Electives	5	Electives	4

SENIOR YEAR.

First Semester.		Second Semester.	
Agron. 55, Farm Manag't	3	*Agron. 54*, Fertilizers	3
Econ. 1, El. Econ.	3	*Econ. 8*, Agr. Econ.	3
Met. 1	2	*Educ. 8 or 10*, Hist. of Educ.	2
Psych. 53, Adolescent Psych.	3	*Educ. 4*, School Hygiene	2
Electives	7	*Hort. 64*, Evol. of Plants	2
		Electives	5

ARTS AND SCIENCE DIVISION.

General Arts and Science Course.

All elective except English 51 and 52, Drill and Military Science, and for women, Home Economics 1 and Physical Culture.

FRESHMAN YEAR.

First Semester.	Credit Hours	Second Semester.	Credit Hours
Chem. 51, Inor. Chem.	3	*Chem. 52*, Inor. Chem. *or* *Chem. 56*, Spec. Chem.	3
Chem. 55, Inor. Chem.	4		
Draw. 51, Eng. Draw.	2	*Draw. 52*, Mach. Draw.	3
Draw. 63, Free-Hand Draw.	2	*Draw. 64*, Free-hand Draw.	2
Draw. 67, House Planning	2	*Draw. 68*, House Structure	2
Engl. 51, Comp. and Rhet.	3	*Econ. 2*, Com. Geog.	3
Fr. 1, El. Fren.	3	*Engl. 52*, Comp. and Rhet.	3
Ger. 1, El. Germ.	3	*Engl. 54*, Intro. to Engl. Lit.	3
Hist. 1, European, 476–1492	3	*Fr. 2*, El. Fren.	3
H. E. 1, Per. Hyg.	1	*Ger. 2*, El. Germ.	3
H. E. 3, El. Sewing	1	*Hist. 2*, European, 1492–1715	3
Latin 1, Livy	3	*H. E. 2*, The House	2
Math. 51a, Alg. and Trig	4	*H. E. 4*, El. Sewing Cont.	1
Math. 51b, Trig. and Anal. Geom.	4	*Latin 2*, Horace	3
Math. 53, Sol. Geom.	2	*Math. 52*, Anal. Geom.	3
Mil. Art 1	2	*Math. 54*, Surveying	2
Phys. Cult. 1	1	*Math. 66*, Calc.	3
Span. 1, El. Span.	3	*Mil. Art 2.*	2
Shop 51, Wood Work	2	*Phys. Cult. 2*	1
Zoöl. 51, Gen. Zoöl.	3	*Span. 2*, El. Span.	3
		Zoöl. 52, Gen. Zoöl.	3
		Zoöl. 58, Hum. Anat. and Physiol.	3

SOPHOMORE YEAR.

(All elective except Drill, Military Science and Physical Culture.)

First Semester.		Second Semester.	
Bot. 51, Gen. Bot.	3	*Bot. 52*, Gen. Bot.	3
Chem. 57, Spec. Org. Chem.	3	*Chem. 68*, Org. Chem.	3
Chem. 59, Intro. Qual. Anal.	2	*Draw. 64a*, Adv. Free-hand Draw.	2
Draw. 53, Descr. Geom.	3	*Draw. 70*, Color and Design	2
Draw. 63a, Adv. Free-hand Draw.	2	*Econ. 2*, Com. Geog.	3
Draw. 69, Free-hand Draw	2	*Engl. 54*, Intro. to Engl. Lit.	3
Econ. 1, El. Econ.	3	*Engl. 56*, Argum.	3
Educ. 1 or 3, Hist. of Educ.	2	*Engl. 58*, Eliz. Drama	3
Engl. 53, Adv. Comp. and Lit. Crit.	3	*Ent. 2*, Appl. Econ. Ent.	3
Engl. 63, Writing for Pub	3	*Ent. 4*, Hsehld Insects	2
Ent. 1, Econ. Ent.	3	*Fr. 4*, Prose	3
Fr. 3, Prose	3	*Ger. 4*, Prose	3
Ger. 3, Prose	3	*Hist. 4*, European, since 1815	3
Hist. 3, European, 1715–1815	3	*H. E. 6*, Textiles	2
H. E. 7, Foods	4	*H. E. 8*, Foods	4
Math. 55, Calc.	3	*Math. 56*, Calc.	3
Math. 66, Calc.	3	*Mil. Art 4.*	2
Mil. Art 3.	2	*Phys. Cult. 4*	1
Phys. Cult. 3	1	*Phys. 52*, Magn. and Elec.	2

	Credit Hours
Phys. 51, Mech. and Heat	2
Phys. 53, Phys. Theo. and Prac.	6
Phys. 59, El. Optics	2
Soc. 51, Prim. Man and Soc. Origins	3
Span. 1, El. Span.	3
Span. 3, Prose	3
Zoöl. 51, Gen. Zoöl.	3
Zoöl. 53, Faunal Zoöl. (Invert.)	3
Phys. 54, Phys. Theo. and Prac.	6
Phys. 58, El. Phys. and Prac.	3
Psych. 52, Intr. to Psych.	3
Span. 2, El. Span	3
Span. 4, Prose	3
Zoöl. 52, Syst. Zoöl.	3
Zoöl. 54, Faunal Zoöl. (Vert.)	3

JUNIOR YEAR.

First Semester.

Bot. 53, Plt. Physio.	3
Bot. 55, Gen. Bact.	3
Bot. 57, Plt. Path	3
Chem. 65, Quant. Anal.	4
Dairy, 51, Dom. Dairy	3
Econ. 5, Labor Prob.	3
Econ. 9, Corp. Fin.	3
Econ. 13, Acctng.	3
Engl. 53, Adv. Comp. and Lit. Crit.	3
Engl. 55, The Engl. Novel, *or* *Engl. 57*, Mod. Engl. Poetry	3
Engl. 61, Mod. Engl. Prose	3
Engl. 63, Writing for Pub.	3
Ent. 1, Econ. Ent.	3
Ent. 3, Insects of Dom. Ani.	2
Ent. 5, Adv. Econ. Ent.	2
For. 51, Prin. of For.	3
Fr. 5 or 7, Fren. Lit. and Comp.	3
Geol. 51, El. Geol.	3
Ger. 5, Goethe, *or* *Ger. 7*, Schiller, *or* *Ger. 13*, Sudermann	3
Ger. 9 or 11, Ger. Comp. and Con.	3
Hist. 5, Am. to 1801	3
H. E. 5, H. E. in Hist.	2
H. E. 11, Prin. of Nutr.	3
H. E. 13, House Dec.	2
Math, 57, Dif. Equa. *or* *Math. 59*, Theo. of Equa.	2
Mil. Art, 5	3
Phys. Cult. 5	1
Phys. 55, Math. Phys. and Prac.	6
Pol. Sci. 3, Am. Const. Law	3
Psych. 53, Psych. of the Adoles.	3
Soc. 53, Ment. Def., *or* *Soc. 55*, Soc. Psych.	3
Span. 1, El. Span.	3
Zoöl. 59, Hyg. and San.	3
Zoöl. 61, Embr.	3
Zoöl. 65, Comp. Anat.	3
Zoöl. 67, Hist.	3

Second Semester.

Bot. 54, Plt. Hist.	2
Bot. 56, Bact.	3
Chem. 68, Org. Chem.	3
Econ. 4, Mon. and Bank. *or* *Econ. 6*, Pub. Fin. and Tax.	3
Econ. 8, Agri. Econ.	3
Econ. 14, Cost Acctng.	3
Econ. 16, Auditing	3
Educ. 4, Sch. Hyg.	2
Engl. 54, Intr. to Engl. Lit	3
Engl. 56, Arg.	3
Engl. 58, Eliz. Drama	3
Engl. 60, Am. Lit.	4
Engl. 62, Shak.'s Plays	3
Ent. 4, Hsehld. Insects	2
Ent. 6, Adv. Econ. Ent.	3
For. 52, Silv.	3
Fr. 6 or 8, Fren. Lit. and Comp.	3
Ger. 6, Goethe, *or* *Ger. 8*, Schiller, *or* *Ger. 14*, Sudermann	3
Ger. 10 or 12, Germ. Comp. and Conv.	3
Hist. 6, American, 1801–1861	3
H. E. 10, El. Dressmkg.	2
H. E. 12, Diet.	3
Math. 58, Adv. Calc., *or* *Math. 60*, Hist. of Math.	2
Mil. Art, 6	3
Min. 54	2
Phys. Cult. 6	1
Phys. 56, Math. Phys. and Prac.	6
Pol. Sci. 2, Laws of Bus.	3
Psych. 52, Intr. to Psych.	3
Soc. 52, Soc. Path. and Mod. Phil.	3
Span. 2, El. Span.	3
Zoöl. 54, Faunal Zoöl.	3
Zoöl. 60, Adv. San.	3
Zoöl. 66, Comp. Anat. of the Vert.	3

SENIOR YEAR.

First Semester.	Credit Hours	Second Semester.	Credit Hours
Bot. 53, Plt. Physiol.	3	*Astr. 2*	2
Bot. 55, Gen. Bact.	3	*Bot. 54*, Plt. Hist.	2
Bot. 57, Plt. Path.	3	*Bot. 56*, Bact.	3
Chem. 71, Organ. Chem. Lab.	3	*Chem. 76*, Phys. and Elec. Chem.	3
Dairy. 51, Dom. Dairy	3	*Econ. 4*, Mon. and Bank., *or* *Econ. 6*, Pub. Fin. and Tax.	3
Econ. 5, Labor Prob.	3	*Econ. 8*, Agr. Econ.	3
Econ. 9, Corp. Fin.	3	*Econ. 14*, Cost Acctng.	3
Econ. 13, Acctng.	3	*Econ. 16*, Auditing	3
Econ. 15, Adv. Acctng. Prob.	3	*Educ. 6*, Ind. Educ.	2
Educ. 5, Sec. Educ.	3	*Engl. 56*, Arg.	3
Educ. 7, Prin. of Educ.	3	*Engl. 58*, Eliz. Drama	3
Educ. 9, Adm. and Super.	2	*Engl. 60*, Am. Lit.	4
Engl. 55, Engl. Novel	3	*Engl. 62*, Shak.'s Plys.	3
Engl. 57, Mod. Engl. Poetry	3	*Engl. 64*, Teach. Course	1
Engl. 59, Chaucer	3	*Ent. 2*, Appl. Econ. Ent.	3
Engl. 61, Mod. Engl. Prose	3	*Ent. 4*, Hsehld. Insects	2
Ent. 1, Econ. Ent.	3	*Fr. 6 or 8*, Fr. Lit. and Comp.	3
Ent. 3, Insects of Dom. An.	2	*Geol. 52*, Hist. Geol.	3
Ent. 5, Adv. Econ. Ent.	3	*Ger. 6*, Goethe, *or* *Ger. 8*, Schiller, *or* *Ger. 14*, Sudermann	3
Fr. 5 or 7, Fren. Lit. and Comp.	3	*Ger. 10, or 12*, Ger. Comp. and Con.	3
Geol. 51, El. Geol.	3	*H. E. 26*, Survey of Foods	2
Ger. 5, Goethe, *or* *Ger. 7*, Schiller, *or* *Ger. 13*, Sudermann	3	*Math. 58*, Adv. Calc., *or* *Math. 60*, Hist. of Math. Sci.	2
Ger. 9 or 11, Ger. Comp. and Con.	3	*Mil. Art, 8*	3
Hist. 7, American since 1860	3	*Phys. Cult. 8*	1
H. E. 15, Dressmkg.	2	*Pol. Sci. 2*, Laws of Bus.	3
H. E. 19, Hsehld. Adm.	3	*Soc. 54*, Rural Soc.	3
Math. 57, Dif. Equa., *or* *Math. 59*, Theo. of Equa.	2	*Soc. 56*, Intr. to Gen. Soc, *or* *Soc. 58*, Soc. Eth.	3
Met. 1,	2	*Span. 4*, Prose	3
Mil. Art, 7	3	*Thesis*	1 or 2
Phys. Cult. 7	1	*Zoöl. 56*, Orn.	3
Pol. Sci. 3, Am. Const. Law	3	*Zoöl. 62*, Adv. Neu.	3
Soc. 53, Ment. Def.	3	*Zoöl. 64*, Evol. and Gen.	3
Span. 3, Prose	2	*Zoöl. 68*, Insect Anat.	3
Thesis	2	*Zoöl. 70*, Adv. Zoöl.	3
Zoöl. 55, Syst. Ent.	3	*Zoöl. 72*, Voc. Zoöl.	3
Zoöl. 69, Adv. Zoöl.	3		
Zoöl. 71, Voc. Zoöl.	3		

Home Economics Course.

FRESHMAN YEAR.

First Semester.		Second Semester.	
Required Subjects:		Required Subjects:	
Chem. 55, Inor. Chem.	4	*Chem. 56*, Inorg. Chem.	3
Draw. 67, Houseplanning	2	*Draw. 68*, House Structure	2
Engl. 51, Comp. and Rhet.	3	*Engl. 52*, Comp. and Rhet.	3
H. E. 1, Personal Hyg.	1	*H. E. 2*, The House	2
H. E. 3, El. Clothing	1	*H. E. 4*, El. Clothing	1
Phys. Cult. 1	1	*Phys. Cult. 2*	1
Zoöl. 51, Gen. Zoöl.	3	*Zoöl. 58*, Hum. Anat. and Physiol.	3

	Credit Hours
*Elective Subjects: Total hrs.	3
Fr. 1, El. Fr.	3
Ger. 1, El. Ger.	3
Hist. 1, European 476–1492	3
Math. 51a, Alg. and Trig.	4
Math. 51b, Trig. and Anal. Geom.	4

	Credit Hours
*Elective Subjects: Total hrs.	3
Engl. 54, Intro. to Eng. Lit.	3
Fr. 2, El. French	3
Ger. 2, El. German	3
Hist. 2, European 1492–1715	3

SOPHOMORE YEAR.

First Semester.

Required Subjects:	
Chem. 57, Org. Chem.	3
Draw. 60, Freehand Draw.	2
H. E. 7, Foods and Cooking	4
Phys. Cult. 3	1
Zoöl. 59, Hyg. and Sanitation	3
*Elective Subjects: Total hrs.	3
Bot. 51, Gen. Bot.	3
Engl. 53, Adv. Comp. and Crit.	3
Fr. 3, Prose	3
Ger. 3, Prose	3
Hist. 3, European 1715–1815	3
†*Phys. 57*, Household Phys.	3

Second Semester.

Required Subjects:	
H. E. 6, Textiles	2
H. E. 8, Foods and Cooking	4
Draw. 70, Color and Design	2
Phys. Cult. 4	1
Psych. 52, Intro. to Psych.	3
Elective Subjects: Total hrs.	4
Bot. 52, Gen. Bot.	3
Engl. 56, Argumentation	3
Ent. 4, Household Insects	2
Hist. 4, European since 1815	3
Fr. 4, Prose	3
Ger. 4, Prose	3

JUNIOR YEAR.

First Semester.

Required Subjects:	
Bot. 55, Bact.	3
Econ. 1, El. Econ.	3
H. E. 11, Nutrition	3
H. E. 13, House Decor.	2
Phys. Cult. 5	1
*Elective Subjects: Total hrs.	3
Chem. 69, Household Chem.	3
Dairy 51, Domes. Dairy	3
Engl. 57, Mod. Eng. Poetry	3
Hist. 5, Am. to 1801	3
H. E. 5, H. E. in History	2
Psych. 53, Adolesc. Psych.	3

Second Semester.

Required Subjects:	
H. E. 10, El. Dressmaking	2
H. E. 12, Dietetics	3
Phys. Cult. 6	1
*Elective Subjects: Total hrs.	10
Educ. 4, School Hygiene	2
Engl. 60, Am. Lit.	4
Hist. 6, Const. and Pol. Hist. of U. S.	3
Poultry 6, Poul. for the Home	2

SENIOR YEAR.

First Semester.

Required Subjects:	
H. E. 15, Dressmaking	2
H. E. 19, Household Admin.	3
Soc. 51, Primitive Man	3
*Elective Subjects: Total hrs.	8
Educ. 5, Secondary Educ.	3
Hist. 7, Am. to 1860	3
H. E. 21, Sr. Prob. in H. E.	2
Psych. 55, Soc. Psych.	3

Second Semester.

Required Subjects:	
H. E. 22, Seminar	1
Soc. 52, Soc. Path. and Mod. Philan.	3
Zoöl. 64, Evol. and Genetics	3
*Elective Subjects: Total hrs.	9
Educ. 1, 3, or 6, Hist. of Educ.	2
H. E. 24, Teachers' study	2
Soc. 54, Rural Soc.	3

*Other subjects may be offered for the elective requirement. The student has a choice of a wide range from all departments of the college.

†Should be elected by students not offering physics for entrance.

Mechanic Arts Course for Teachers.

FRESHMAN YEAR.

First Semester.	Credit Hours	Second Semester.	Credit Hours
Chem. 51, Inor. Chem.	3	*Chem. 52*, Inor. Chem.	3
Draw. 51, Eng. Draw.	2	*Draw. 52*, Mach. Draw	3
Engl. 51, Engl. Comp. and Rhet.	3	**Econ. 2*, Com. Geog.	3
Math. 51a, Alg. and Trig., *or* *Math. 51b*, Trig. and Anal. Geom.	4	*Engl. 52*, Comp. and Rhet.	3
		**Math. 52*, Anal. Geom.	3
Math. 53, Sol. Geom.	2	*Math. 54*, Surveying	2
Mil. Art, 1	2	*Mil. Art, 2*	2
Shop 51, Wood Work	2	*Shop 52*, Wood Work	2

SOPHOMORE YEAR.

First Semester.		Second Semester.	
Chem. 59, Intro. Qual. Anal.	2	*Draw. 64*, Free-hand Draw	2
Draw. 53, Descr. Geom	3	**Engl. 56*, Arg.	3
Econ. 1, El. Econ.	3	**Ger. 2*, El. Germ.	3
**Ger. 1*, El. Germ.	3	*Mil. Art, 4*	2
Mil. Art, 3	2	*Phys. 52*, Mag. and Elec.	2
Phys. 51, Mech. and Heat.	2	*Phys. 58*, El. Phys. and Prac.	3
Shop 59, Wood Work	3	*Psych. 52*, Intr. to Psych.	3
**Zoöl. 51*, Gen. Zoöl.	3	*Shop 60*, Wood Work	3
		**Zoöl. 52*, Gen. Zoöl.	3

JUNIOR YEAR.

First Semester.		Second Semester.	
Draw. 65, Arch. Draw	2	*Draw. 66*, Arch. Draw.	2
Educ. 5, Sec. Educ.	3	**Econ. 4*, Mon. and Bank.. *or* **Econ. 6*, Pub. Fin. and Tax'n	3
Engl. 53, Adv. Comp.	3	*Educ. 4*, Sch. Hyg.	2
**Engl. 55*, Engl. Novel, *or* **Engl. 57*, Mod. Engl. Poetry	3	**Engl. 58*, Eliz. Drama.	3
For. 53, Dend.	3	**For. 60*, For. Util.	3
**Geol. 51*, El. Geol.	3	**Ger. 4*, Prose	3
**Ger. 3*, Prose	3	**Hist. 2*, European, 1492–1715	3
**Hist. 1*, European, 476–1492	3	**Mil. Art, 6*	3
**Mil. Art, 5*	3	**Pol. Sci. 2*, Laws of Bus.	3
Shop 65, Wood Work	2	*Shop 66*, Forge Work	3

SENIOR YEAR.

First Semester.		Second Semester.	
E. E. 9, Ind. Elec.	3	*Draw. 72*, Prac. Math.	1
**Engl. 55*, Engl. Novel, *or* *Engl. 57*, Mod. Engl. Poetry	3	**Econ. 4*, Mon. and Bank, *or* **Econ. 6*, Pub. Fin. and Tax'n	3
**Mil. Art, 7*	3	*Educ. 6*, Ind. Educ.	2
**Pol. Sci. 3*, Am. Const. Law	3	**Engl. 60*, Am. Lit.	4
Psych. 53, Adol. Psych.	3	**For. 60*, For. Util.	3
Shop 67, Shop Teach.	2	**Hist. 6*, American, 1801–1861	3
Shop 71, Mach. Work	3	*M. E. 72*, Man. Tr.	1
Soc. 51, Prim. Man and Soc. Orig.	3	**Mil. Art, 8*	3
		Shop 72, Mach. Work	3
		**Soc. 52*, Soc. Path.	3
		**Soc. 54*, Rural Soc.	3

*Elective.

ENGINEERING DIVISION.

Electrical and Mechanical Engineering Courses.

FRESHMAN YEAR.

First Semester.	Credit Hours	Second Semester.	Credit Hours
Chem. 51, Inor. Chem.	3	*Chem. 52*, Inor. Chem.	3
Draw. 51, Eng. Draw.	2	*Chem. 54*, Qual. Anal. Lab.	3
Engl. 51, Comp. and Rhet.	3	*Draw. 56*, Descr. Geom.	3
Math. 51b., Trig. and Anal. Geom	4	*Math. 52*, Anal. Geom.	3
Math. 53, Solid Geom.	2	*Math. 66*, Calculus	3
Mil. Art, 1	2	*Mil. Art, 4*	2
Shop 51	2		

SOPHOMORE YEAR.

First Semester.		Second Semester.	
Draw. 57, Mach. Draw. Lab.	3	*M. E. 74*, Kinematics of Mach.	2
Engl. 52, Comp. and Rhet.	3	*Math. 56*, Calc.	3
Math. 55, Calculus	3	*M. E. 52*, Mechanics of Eng.	3
Phys. 53, Phys. Theory and Prac.	6	*Phys. 54*, Phys. Theory and Prac.	6
Shop 57, Forging	2	*Shop 62*, Mach. Work	2
Mil. Art, 3	2	*Mil. Art, 4*	2

JUNIOR YEAR.

First Semester.		Second Semester.	
E. E. 1, Dynamo Elec. Mach.	4	*E. E. 2*, Dynamo Elec. Mach.	4
M. E. 69, Mech. of Eng.	5	**E. E. 30*, Problems	1
M. E. 59, Mech. Lab.	2	*M. E. 64*, Mach. Design	4
M. E. 63, Mater'ls of Const.	3	*M. E. 60*, Mech. Lab.	2
**M. E. 77*, Valve Gear and Boiler Design	2	*M. E. 62*, Hydraulics	3
M. E. 77a, Problems	1	*M. E. 58*, Thermodynamics	3
Shop 63, Mach. Work	2	*Shop Work 64*, Manufacturing	2
**Mil. Art, 5*	3	**Mil. Art, 6*	3

SENIOR YEAR.

First Semester.		Second Semester.	
E. E. 11, Elec. Eng. Prac.	4	*E. E. 12*, Elec. Eng. Prac.	4
E. E. 15, Elec. Lab.	3	*E. E. 14*, Elec. Rys.	2
M. E. 73, Power Plant Eng.	4	*E. E. 16*, Elec. Lab.	3
M. E. 65, Mech. Lab.	2	*E. E. 24*, Design of Elec. Mach.	2
E. E. 27, Contr. and Spec.	1	*E. E. 26*, Illum'g Eng.	2
**E. E. 3*, Tel's, and Tel's	1	*Math. 64*, Surveying	3
**Econ. 13*, Accounting	3	**Engl. 56*, Arg.	3
Econ. 1, El. Econ.	3	**Math. 58*, Adv. Calc. *or* **Math. 60*, Hist. of Math. Sci.	2
**Pol. Sci. 3*, Amer. Const. Law	3	**Psych. 52*, Intro. of Psych.	3
**Math. 57*, Differential Equations, *or* **Math. 59*, Theory of Equations	2	**Soc. 52*, Social Pathology	3
**Mil. Art, 7*	3	**Econ. 4*, Money and Bank'g *or* **Econ. 6*, Pub. Fin. and Tax'n.	3
		**Econ. 14*, Cost Accounting	3
		**Econ. 2*, Geog. of Commerce	3
		**Pol. Sci. 2*, Laws of Bus.	3
		**Mil. Art, 8*	3

*Elective.

Mechanical Engineering Course.

SENIOR YEAR.

First Semester.	Credit Hours	Second Semester.	Credit Hours
Econ. 1, El. Econ	3	**Econ. 2*, Com. Geog	3
**Econ. 13*, Acctng	3	**Econ. 4*, Mon. and Bank	3
**E. E. 3*, Tel. and Tel	1	**Econ. 6*, Pub. Fin. and Tax'n	3
E. E. 27, Contr. and Spec	1	**Econ. 14*, Cost Acctng	3
**Math. 57*, Dif. Equa	2	*E. E. 12*, E. E. Prac	4
**Math. 59*, Theo. of Equa	2	**Engl. 56*, Arg	3
M. E. 73, Power Plt. Eng	4	**H. E. 26*, Survey in foods	2
M. E. 65, Mech. Lab	2	**Math. 58*, Adv. Calc., *or* / **Math. 60*, Hist. of Math. Sci.	2
M. E. 79, Htng. and Vent	4	*Math. 64*, Surveying	3
**Mil. Art, 7*	3	*M. E. 66*, Mech. Lab	3
**Pol. Sci. 3*, Am. Const. Law	3	*M. E. 68*, Design	3
Shop 69, Wood Work	2	*M. E. 78*, Ind. Eng	3
		**Mil. Art, 8*	3
		**Pol. Sci. 2*, Laws of Bus	3
		**Psych. 52*, Intr. to Psych	3
		**Soc. 52*, Soc. Path	3

Chemical Engineering Course.

FRESHMAN YEAR.

First Semester.		Second Semester.	
Chem. 51, Inor. Chem	3	*Chem. 52*, Inor. Chem	3
Draw. 51, Eng. Draw	2	*Chem. 54*, Qual. Anal	3
Engl. 51, Comp. and Rhet	3	*Fr. 2*, El. Fren., *or* / *Ger. 2*, El. Germ.	3
Fr. 1, El. Fren., *or* / *Ger. 1*, El. Germ.	3	*Math. 52*, Anal. Geom	3
Math. 51b, Trig. and Anal. Geom	4	*Math. 66*, Calc	3
Mil. Art 1	2	*Mil. Art 2*	2
Shop 51a, Wood Work	1		

SOPHOMORE YEAR.

First Semester.		Second Semester.	
Chem. 61, Qual. Anal	1¼	*Chem. 66*, Quant. Anal	5
Chem. 63, Inor. Prep	¾	*Chem. 68a*, Org. Chem	3
Chem. 65, Quant. Anal	4	*Min. 54*, Min	2
Chem. 67a, Org. Chem	2	*Ger. 16*, Prose	3
Engl. 52	3	*Math. 56*, Calc	3
Ger. 3, Prose	3	*Mil. Art 4*	2
Math. 55, Calc	3		
Mil. Art, 3	2		

JUNIOR YEAR.

First Semester.		Second Semester.	
Chem. 71, Org. Chem. Lab	3	*Chem. 74*, Adv. Quant. Anal	5
Chem. 73, Adv. Quant. Anal	4	*Chem. 76*, Phys. and Elec. Chem., *or* / *Chem. 78*, Ind. Chem. / *Chem. 80*, Met.	3
Chem. 75, Phys. Chem., *or* / *Chem. 77*, Adv. Inor. Chem.	3	**Mil. Art, 6*	3
**Mil. Art 5*	3	*Phys. 56*, Math. Phys. and Prac	6
Phys. 55, Math. Phys. and Prac	6	*Shop 68*, Mach. Work	2
Electives	3	Electives	3

*Elective.

SENIOR YEAR.

First Semester.	Credit Hours	Second Semester.	Credit Hours
Chem. 75, Phys. Chem., *or* *Chem. 77*, Adv. Inorg. Chem.	... 3	*Chem. 76*, Phys. and Electrochem., *or* *Chem. 78*, Ind. Chem. *Chem. 80*, Met.	3
Chem. 79, Assaying	1	*Chem. 84*, Thesis	8
Chem. 83, Adv. Quant. Lab.	6	*E. E. 22*, Ind. Elec.	3
**Econ. 1*, El. Econ.	3	**Engl. 56*, Arg.	3
E. E. 21, Mat. of Const.	3	*M. E. 58*, Ther.	2
M. E. 63, Mat. of Const.	3	**Mil. Art. 8*	3
**Mil. Art 7*	3	**Soc. 52*, Soc. Path.	3

*Elective.

DESCRIPTION OF STUDIES.

Each department is given in capital letters, arranged alphabetically and followed by the professors and instructors connected with it. The number of each individual subject is followed by the name of the instructor who gives it, and the room and building in which the class will meet. Abbreviations for the buildings are as follows: C. H.—Conant Hall; D. H.—DeMeritt Hall; Lib.—Library; M. H.—Morrill Hall; N. H.—Nesmith Hall; T. H.—Thompson Hall.

Following the description of each subject will be found the prerequisites, if any, and the nature and number of the meetings of the class per week. Except in drill and physical culture, the number of hours of credit each subject will count toward graduation will be equal to the number of meetings of the class per week. The following abbreviations tell the nature of the exercise: Lec.—lecture; Rec.—recitation; each of which are one hour in length; and Lab.—laboratory, two and one-half hours long.

An elective subject will be given only when there is a sufficient number of students taking the same.

AGRICULTURE.

DEAN OF DIVISION AND HEADS OF DEPARTMENTS.

1. Survey of Agriculture. 110 M.H.

A brief history of agriculture as a business and scientific profession in this country; a general discussion and survey of the various branches of agriculture and the opportunities for work which each affords. The subject is intended primarily to assist the student in selecting his technical subjects in the later years of his college course.

1 Lec. per week. 1st S.

AGRONOMY.

PROF. TAYLOR, ASST. PROF. PRINCE, MR. YOUNG.

51. Agricultural Engineering. Prof. Taylor. 110 M.H.

Lectures and recitations upon the mapping of farms; fencing; drainage; farm sanitation; tillage and harvesting machinery; concrete construction; silos; farm motors; roads and principles of draft. Practical work in map making, laying out drains, rope splicing, comparing farm machines, etc. For Agricultural Sophomores.

2 Lec., 1. Lab. per week. 1st S.

52. Soils. Asst. Prof. Prince. 110 M.H.

Text-book and recitations upon the formation, kinds and physical properties of soils; the movements and conservation of soil moisture; the relation of heat and air to soil; the nature and physical effects of tillage and fertilizers; laboratory work and experimentation with soils to show the physical effects of different conditions and texture. For Agricultural Juniors. *2 Lec., 1 Lab. per week. 2d S.*

53. Field Crops. Asst. Prof. Prince. 110 M.H.

Text-book and recitations upon the history, use, value and methods of culture of our various field crops, including hay and grass, with particular reference to New England conditions. Laboratory practice in judging the different varieties of grains and grasses. For Agricultural Juniors except in Forestry Course.

2 Lec., 1 Lab. per week. 1st S.

54. Fertilizers. Prof. Taylor. 110 M.H.

Lectures, text-book and recitations upon the principles of fertility and plant nutrition. A study of the value and use of plant food materials, including farm manures. For Agricultural Seniors except in Forestry Course.

Prerequisites—Chemistry 51 and 52. 3 Rec. per week. 2d S.

55. Farm Management. Mr. Young. 110 M.H.

Text-book, lectures and recitations upon the development of farming as a business, types of farming, size of farms, cropping systems, live stock problems, marketing farm products, and choosing and buying a farm. Practical work will be given in laying out farms; studying survey records of individual farms to find the labor income; also anaylzing the farm business record to determine the effect of efficiency factors on the profits made. Exercises will be given in farm building arrangements, distribution of labor throughout the year, and taking survey record of the home farm. For Agricultural Seniors, except in Forestry Course.

Prerequisite—Agronomy 51. 2 Lec., 1 Lab. per week. 1st S.

56. Special Agronomy. Prof. Taylor. 110 M.H.

Advanced work for students interested in some particular line. No class exercises. The hours and kind of work must be arranged with the department before the subject is elected. For Agricultural Seniors.

Prerequisite—All preceding subjects in Agronomy except 54.

Three credit hours. 2d S.

57. Agricultural Seminar. Prof. Taylor. 110 M.H.

Library and reference work, the preparation of bibliographies, a study of the work and history of agricultural colleges and experiment stations. Lectures upon the history of agriculture. Elective for Agricultural Seniors.

2 Lec. per week. 1st S.

58. Farm Cost Accounting. Mr. Young. 110 M.H.

Lectures on the principles of cost accounting as applied to farming, including business forms, and certain legal aspects of farming as a business. Laboratory exercises include the study of inventories, accounts with single enterprises and set of complete cost accounts taken from actual farms.

For Agricultural Juniors. 1 Lec., 1 Lab. per week. 2d S.

ANIMAL HUSBANDRY.

PROF. ECKMAN, MR. FAWCETT.

51. Types and Breeds of Live Stock. Mr. Fawcett. 105 M.H.

A study of the different breeds of horses, cattle, sheep, and swine in respect to their origin, history, development, characteristics, and adaptability to different conditions of climate and soil. One afternoon each week is devoted to judging the different breeds. For Agricultural Sophomores.

2 Rec., 1 Lab. per week. 1st S.

52. Stock Judging. Mr. Fawcett. 105 M.H.

The work consists of a study of the principles and practice of judging live stock and market classes and grades. Students intending to compete for the live stock judging team should elect this subject. For laboratory work trips are taken to some of the best herds in New England. Elective for Agricultural Sophomores.

Prerequisite—Animal Husbandry 51. *2 Rec. per week. 2d S.*

54. Feeds and Feeding. Mr. Fawcett. 105 M.H.

A study of the laws of nutrition, the character and composition of feed stuffs and methods of feeding different kinds of farm animals. For the purpose of familiarizing the students with the various feed stuffs, numerous samples of grains and by-products are used. Practice is given in calculating rations for various purposes. For Agricultural Juniors in Animal Husbandry and Dairying, and General Agricultural Courses. Elective for others.

Prerequisites—Chemistry 51 and 52. *2 Rec., 1 Lab. per week. 2d S.*

55. Veterinary Anatomy. Prof. Eckman. 105 M.H.

Lectures and recitations upon the form and structure of the domesticated animals. Special attention is paid to the study of the horse and cow. Skeletons, various anatomical specimens, models, charts and lantern slides are used to make the subject as practical as possible. The purposes of this subject are to show the relation between the skeleton and the form of the animal, to acquaint the student with the various important organs of the body and to serve as a foundation for the study of animal diseases. For Animal Husbandry Juniors. Elective for others. *3 Rec. per week. 1st S.*

56. Animal Diseases. Prof. Eckman. 105 M.H.

A study of the more common diseases of farm animals and methods of prevention and treatment, simple surgical operations, horse-shoeing and soundness. For Animal Husbandry Juniors. Elective for others.

Prerequisite—Animal Husbandry 55. *3 Rec. per week. 2d S.*

57. Animal Breeding. Prof. Eckman. 105 M.H.

A study of the principles and practices of breeding farm animals. Practice is given in studying and tracing out pedigrees. For Seniors in Animal Husbandry and Dairy Course.

Prerequisite—Animal Husbandry 51. *2 Rec., 1 Lab. per week. 1st S.*

58. Live Stock Management. Prof. Eckman. 105 M.H.

Lectures and recitations upon the care and management of breeding and show animals. Elective for Agricultural Seniors.

Prerequisites—Animal Husbandry 51, 54, 56, and 57.

3 Rec. per week. 2d S.

63. Animal Diseases. Prof. Eckman. 105 M.H.

A continuation of Animal Husbandry 56. Practice is given in diagnosing diseases and treating such cases as can be found in the vicinity of Durham. Elective for Agricultural Seniors.

Prerequisite—Animal Husbandry 56. *3 Rec. per week. 1st S.*

65. Live Stock Markets and Products. Mr. Fawcett. 105 M.H.

A study of the various kinds of live stock markets and of the methods and regulations applying to the transportation of live stock. Some time will be spent in a study of the large live stock centers, the stock yards, and the government inspection of animals before and after slaughter. The various cuts of meats, and butchering of animals on the farm will be discussed. References will be supplied the student for individual work. Occasional trips will be taken to slaughter houses and packing-plants. Elective for Animal Husbandry Seniors.

Prerequisite—Animal Husbandry 52. *3 Rec. per week. 1st S.*

ASTRONOMY.

PROF. PETTEE.

2. Astronomy. Prof. Pettee. 102 T.H.

A short culture subject designed to give the student a simple explanation of the many phenomena constantly exhibiting themselves in the universe and to acquaint him with the present state of astronomic science. Elective for Arts and Science Juniors and Seniors.

2 Rec. per week. 2d S.

BOTANY.

PROF. BUTLER, ASSOC. PROF. BLACK, MR. DORAN.

51. General Botany. Assoc. Prof. Black. 206 N.H.

Morphology and histology of plants. For Agricultural Freshmen. Elective for other students. Given in two sections.

1 Lec., 2 Lab. per week. 1st S.

52. General Botany. Assoc. Prof. Black. 206 N.H.

Organography and classification of plants. For Agricultural Freshmen. Electives for other students. Given in two sections.

Prerequisite—Botany 51. *1 Lec., 2 Lab. per week. 2d S.*

53. Plant Physiology. Assoc. Prof. Black. 202 N.H.

Structure and properties of the cell, absorption and movement of water; metabolism; growth and irritability. For Forestry, and Horticultural Juniors. Elective for others.

Prerequisites—Botany 51 and 52. *1 Lec., 2 Lab. per week. 1st S.*

54. Plant Histology. Mr. Doran. 206 N.H.

Technique, characterization and differentiation of plant tissues. Comparative histology. For Forestry Juniors. Elective for others.

Prerequisites—Botany 51 and 52. *3 Lab. per week. 2d S.*

55. General Bacteriology. Assoc. Prof. Black. 206 N.H.

Lectures on the morphology and physiology of the bacteria, the principal bacterial diseases, the rôle of bacteria in the arts and industries. For Agriculture and Home Economics Juniors. Elective for others.

3 Lec. per week. 1st S.

56. Bacteriology. Assoc. Prof. Black. 202 N.H.

Technique. Morphology and biology of the principal non-pathogenic and pathogenic bacteria.

Prerequisite—Botany 55. *3 Lab. per week. 2d S.*

57. Plant Pathology. Mr. Doran. 206 N.H.

Fungous Diseases of plants, their symptoms, cause and prevention. For Forestry and Horticultural Seniors. Elective for others.

Prerequisite—Botany 53. *1 Lec., 2 Lab. per week. 1st S.*

58. Mycology. Mr. Doran. 202 N.H.

Morphology and biology of the fungi. For advanced students.

Prerequisite—Botany 57. *2 Lab. per week. 2d S.*

59. Embryology. Assoc. Prof. Black. 202 N.H.

Technique. Origin and development of the embryo. For advanced students.

Prerequisite—Botany 53. *2 Lab. per week. 1st S.*

60. Advanced Botany. Prof. Butler or Assoc. Prof. Black. 202 N.H.

For advanced students. Prerequisites will depend on the nature of the subject selected for study.

Credit and hours by arrangement. 2d S.

61. Advanced Botany. Prof. Butler or Assoc. Prof. Black. 202 N.H.

For advanced students. Prerequisites will depend on the nature of the subject selected for study.

Credit and hours by arrangement. 1st S.

CHEMISTRY.

PROF. JAMES, ASSOC. PROF. PERLEY, MR. STEWART, MR. GRANT.

51. Inorganic Chemistry. { I. Prof. James. 109 C.H.
II. Assoc. Prof. Perley. 204 C.H.

Lectures and recitations on general and theoretical chemistry, illustrated by experiments, charts, specimens, lantern views, etc. Solution of chemical problems will be required. For Agricultural and Engineering Freshmen. Elective for other Freshmen.

2 Lec. and 1 Rec. per week. 1st S.

52. Inorganic Chemistry. { I. Prof. James. 109 C.H.
II. Assoc. Prof. Perley. 204 C.H.

A continuation of Chemistry 51, but the time will be mainly spent on the metallic elements, their metallurgy, salts, etc.

Prerequisite—Chemistry 51. *2 Lec. and 1 Rec. per week. 2d S.*

54. Qualitative Analysis. Assoc. Prof. Perley, Mr. Grant. 201 C.H.

Laboratory practice, with occasional lectures and recitations. The student is expected to become proficient in the separation and detection of the common acids and bases and to keep a full set of notes. For Engineering Freshmen and elective for Arts and Science students, room permitting.

Prerequisite—Chemistry 51. *3 Lab. Periods per week. 2d S.*

55. Inorganic Chemistry. Mr. Grant. 204 C.H.

Similar to Chemistry 51. For Home Economics Freshmen.

3 Rec. 1 Lab. per week. 1st S.

56. Inorganic Chemistry. Mr. Grant. 204 C.H.

A continuation of Chemistry 55 and similar to Chemistry 52.

Prerequisite—Chemistry 55. *3 Rec. per week. 2d S.*

57. Organic Chemistry. Mr. Grant. 109 C.H.

A study of the more important organic compounds from the viewpoint of the Home Economics student. For Home Economics Sophomores.

Prerequisites—Chemistry 55 and 56. *3 Rec. per week. 1st S.*

59. Introductory Qualitative Analysis.
Assoc. Prof. Perley, Mr. Grant. 201 C.H.

Introduction to qualitative analysis specially arranged for Agricultural students. For Agricultural and Mechanic Arts Sophomores.

Prerequisite—Chemistry 51. *2 Lab. per week. 1st S.*

59a. Qualitative Analysis. Assoc. Prof. Perley, Mr. Grant. 201 C.H.

Similar to Chemistry 54. Elective for Arts and Science students.

Prerequisite—Chemistry 51. *3 Lab. per week. 1st S.*

60. Quantitative Analysis. Mr. Stewart. 201 C.H.

Introduction to quantitative analysis, consisting of the analyses of simple compounds and materials such as feeds, fertilizers, soils, water, etc. For Agricultural Sophomores.

Prerequisites—Chemistry 51, 52 and 59. 3 Lab. Periods per week. 2d S.

61. Qualitative Analysis. Assoc. Prof. Perley, Mr. Grant. 201 C.H.

Advanced work for Chemical Sophomores on insoluble substances and the rarer elements, to precede Chemistry 65.

20 Lab. exercises. 1st S.

63. Inorganic Preparations. Prof. Perley, Mr. Grant. 201 C.H.

Study of the preparation and purification of inorganic compounds, including their extraction from minerals. For Chemical Sophomores.

Prerequisites—Chemistry 51 and 52. 12 Lab. exercises. 1st S.

65. Quantitative Analysis. Mr. Stewart. 103, 205 C. H.

A preliminary study of quantitative analysis to familiarize the student with the general methods of chemical manipulation and analysis. For Chemical Sophomores. Elective for Arts and Science Sophomores, Juniors and Seniors, provided laboratory facilities permit.

Prerequisites—Mathematics 52, German 1 and 2, Chemistry 54.

4 Lab. per week. 1st S.

66. Quantitative Analysis. Mr. Stewart. 103, 205 C.H.

A continuation of Chemistry 65. For Chemical Sophomores.

5 Lab. per week. 2d S.

67. Organic Chemistry. Prof. James, 109 C.H.

Lectures and recitations. A study of the chemistry of the carbon compounds. For Chemical Sophomores. Elective for Arts and Science students.

Prerequisites—Chemistry 51 and 52. 2 Rec. per week. 1st S

68. Organic Chemistry. Prof. James. 109 C.H.

A continuation of Chemistry 67. For Chemical Sophomores. Elective for Arts and Science students.

Prerequisite—Chemistry 67. 3 Rec. per week. 2d S.

69. Household Chemistry. Prof. James. 109 C.H.

Treats of the chemistry of foods, beverages, baking chemicals, preservatives and detergents.

For Home Economics Juniors and 1918 Seniors.

Prerequisites—Chemistry 54 and 55. 1 Lec., 2 Lab. per week. 1st S.

71. Organic Chemical Laboratory. Prof. James. 205 C.H.

Consists mainly of laboratory practice in preparing and purifying organic compounds. Lectures and recitations will be held from time to time in connection with the practice. For Chemical Juniors. Elective for Arts and Science students.

Prerequisite—Chemistry 68. *3 Lab. per week. 1st S.*

73. Advanced Quantitative Analysis. Mr. Stewart. 205–103 C.H.

This subject will be made to fit the end which each student has in view and will be largely an individual one. For those students desiring to specialize in agricultural and food chemistry the analysis made will tend in the main toward agricultural products, fertilizers, mucks, marls, manures, dairy products, waters, foodstuffs, sugars, etc. For the student wishing to enter metallurgical works, the analyses will be in the main upon iron and steel and other metals, ores, limestones, slags, alloys, fuels, etc. As a preparation for the study of medicine, work will be done on poisons, drugs, foods, urine, etc. Other lines will be arranged to meet the wants of the individual student. Each student will be given some practice in all of the branches of agricultural, metallurgical, medical, sanitary and industrial chemistry, in order to lay a foundation for any future work which may be required of him. A short study in gas and oil analysis will also be provided. For Chemical Juniors.

Prerequisite—Chemistry 65. *4 Lab. per week. 1st S.*

74. Advanced Quantitative Analysis. Mr. Stewart. 205–103 C.H.

A continuation of Chemistry 73. For Chemical Juniors.

5 Lab. per week. 2d S.

75. Physical Chemistry. Assoc. Prof. Perley. 204 C.H.

Advanced study of chemical theory. Practical experiments will be performed with the aid of the student, in the determination of vapor density, molecular weights, specific heat, etc.; and the study of isomorphism, diffusion of gases, solutions, ionization, electrolysis, molecular and atomic volume, thermo chemistry, equilibrium, the phase rule, etc., will take up much of the time. For Chemical Juniors or Seniors. Elective for Arts and Science students.

Prerequisites—Chemistry 51 and 52. *3 Rec. per week. 1st S.*

***76. Physical and Electro Chemistry, Lectures.**

Assoc. Prof. Perley. 204 C.H.

A continuation of Chemistry 75. For Chemical Juniors or Seniors. Elective for Arts and Science students. *3 Lec. per week. 2d S.*

77. Advanced Inorganic Chemistry. Prof. James. 109 C.H.

Advanced study of the elements and their compounds. For Chemical Juniors and Seniors. Elective for Arts and Science students.

Prerequisites—Chemistry 51 and 52. *3 Rec. per week. 1st S.*

*** Chemistry 78 is given in alternate years with Chemistry 76.**

***78. Industrial Chemistry.** Assoc. Prof. Perley. 204 C.H.

Lectures on chemical manufactures, such as sugar, sodium carbonate, fertilizers, sulphuric acid, glass, matches, paints, dyes, soaps, illuminating gas, petroleum, the processes employed in the smelting of ores, of iron, lead, copper, zinc, silver, gold, etc., and the methods used in refining these metals. The lectures are illustrated by stereopticon and by specimens of products. Trips to the leading New England cities to examine important chemical manufactures will be taken as far as practicable. For Chemical Juniors or Seniors. Elective for Arts and Science students.

Prerequisites—Chemistry 51 and 52. *3 Lec. per week. 2d S.*

79. Assaying. Assoc. Prof. Perley. 7 C.H.

A study in the fire assay of gold and silver ores. For Chemical Seniors.

Prerequisite—Chemistry 65. *Seventeen exercises. 1st S.*

83. Advanced Quantitative Laboratory.
Prof. James, Assoc. Prof. Perley. Research Rooms.

Especially arranged for students of the Chemical Engineering Course. May merge at any time into 84 and will usually do so about the middle of the first semester. For Chemical Seniors.

6 Lab. per week. 1st S.

84. Thesis. (Chemical Research.)
Prof. James, Assoc. Prof. Perley. Research Rooms.

The work of the last semester of the Chemical Engineering Course is given up to the special study of some selected subject in any branch of chemical science and the student is required to present a thesis showing him to be a careful manipulator and a person of independent thought. *8 Lab. per week. 2d S.*

DAIRYING.

PROF. FULLER, ASST. PROF. WILSON.

51. Domestic Dairying. Asst. Prof. Wilson. Dairy Bldg.

Nutritive and economic value of milk; milk hygiene, and the relation of milk to public health; market milk, modified milk, condensed milk, milk powders, fermented milks; butter, cheese and ice cream. Laboratory exercises are given in manufacture and in testing purity of dairy products. Elective for Home Economics and Arts and Science Juniors and Seniors. *2 Lec., 1 Lab. per week. 1st S.*

52. Farm Dairying. Asst. Prof. Wilson. Dairy Bldg.

Dairying in its relation to other branches of agriculture and other industries; study of the composition of milk; the use of the Babcock

test, and tests for determining acidity of milk; the use of the lactometer in detecting adulteration of milk; value and methods of keeping records of dairy cows; coöperation in dairying. Required of all Sophomore Agricultural students. *2 Lec., 1 Lab. per week. 2d S.*

53. Butter Making. Prof. Fuller. Dairy Bldg.

A study of the secretion, and of the chemical and physical properties of milk; different systems of creaming, and factors influencing efficiency of hand separators; pasteurization, cream ripening, commercial starters, churning and machinery. Required for Animal Husbandry and Dairy Juniors. Elective for other Agricultural students.

Prerequisite—Dairying 52. *2 Lec., 1 Lab., per week. 1st S.*

54. Market Milk. Prof. Fuller. Dairy Bldg.

A study of the value of milk as a food; the production and handling of market milk, of certified and modified milk; commercial milk inspection. Exercises will be given in the judging of milk and cream and scoring of dairy barns. For Animal Husbandry and Dairy and General or Teaching Juniors. Elective for all other students.

Prerequisite—Dairying 52. *2 Lec., 1 Lab. per week. 2d S.*

55. Factory Management. Prof. Fuller. Dairy Bldg.

Lectures and recitations on the organization, location, construction and operation of factories; special problems connected with the manufacture of butter; dairy conditions in foreign countries; scoring of butter. Elective.

Prerequisites—Dairying 52 and 53. *2 Lec., 1 Lab. per week. 1st S.*

57. Dairy Bacteriology. Asst. Prof. Wilson. Dairy Bldg.

Methods of bateriological analysis of milk and its products; isolation and study of the different types of dairy bacteria; relation of bacteria to milk and its products; study of effect of separation, clarification, pasteurization, aëration, and straining on bacteria in milk; and the application of bacteriological principles to the dairy industry. Elective for Animal Husbandry and Dairy Seniors.

Prerequisite—Botany 56. *1 Lec., 2 Lab. per week. 1st S.*

58. Cheese Making. Asst. Prof. Wilson. Dairy Bldg.

Lectures and laboratory work covering the details of manufacture, curing and marketing of the more important kinds of cheese.

Prerequisite—Dairying 52. *2 Lec., 1 Lab. per week. 2d S.*

60. Ice Cream Making. Asst. Prof. Wilson. Dairy Bldg.

A study of the making, handling, and marketing of lacto, ices, and ice cream. Elective.

Prerequisite—Dairying 52. *1 Lec., 1 Lab. per week. 2d S.*

64. Dairy Research. Prof. Fuller. Dairy Bldg.

A study of the work of the experiment stations and other dairy literature. Elective.

Prerequisite—6 credit hours in Dairying. *2 Rec. per week.* *2d S.*

DRAWING.

PROF. HUDDLESTON, MR. LATON, MR. ———.

These subjects are of an industrial and cultural nature and include the mathematical, architectural and free-hand branches of the subject.

Recitation or lecture requires one hour in the class room with assigned work to be done outside. Drawing period requires a minimum of two and one-half hours in the drafting room.

Partial credit may be given for work done in preparatory schools if the work is satisfactory to the department. In order to get credit the student must submit for examination the work done in the preparatory school. No college credit will be given for work submitted for entrance.

Students are advised not to purchase drawing materials before consultation with the drawing instructor.

51. Engineering Drawing. Mr. Laton. 3–52 D.H.

Mr. ———. 2–49 D. H.

A subject devoted to the fundamentals of engineering drawing and includes free-hand lettering; the use of drawing instruments; inking; tracing; orthographic projection as a study of the relation of different views of an object; and isometric and oblique projection as a study in the pictorial representation of an object. For Engineering and Mechanic Arts Freshmen. *2 drawing periods per week.* *1st S.*

52. Machine Drawing. Mr. Laton. 3–52 D.H.

Detail and assembly drawing of machines and machine parts; making of blue-prints; instruction in drafting room practice and standards with a brief study of cams and gears. For Electrical, Mechanical and Mechanic Arts Sophomores.

Prerequisite—Drawing 51. *3 drawing periods per week.* *2d S.*

53. Descriptive Geometry. Mr. Laton. 3–52 D.H.

An application of the principles of descriptive geometry to the solution of problems in points, lines, planes and solids; including practical problems on bridge beams, rafters, piping, etc. For Electrical, Mechanical and Mechanic Arts Sophomores.

Prerequisites—Drawing 51 and Mathematics 53.

1 Lec.; 2 drawing periods per week. *1st S.*

54. Agricultural Drawing.

Prof. Huddleston and Mr. ———. 3–52 D.H.

Instruction in this subject includes drafting room exercises in free-hand lettering; the use of drawing instruments; projection drawing as a study of the relation of different views of a given object or structure; isometric drawing as a study in pictorial representation; together with the drawing of plans and elevations of simple farm structures. For Agricultural Freshmen. *2 drawing periods per week. 2d S.*

63. Free-hand Drawing. Prof. Huddleston. 3–55 D.H.

Pencil drawing from geometrical models as a study of proportion, form and free-hand perspective, followed by pencil and charcoal sketching from plaster casts of historic ornament and antique sculpture. Elective for all students. *2 drawing periods per week. 1st S.*

63a. Advanced Free-hand Drawing. Prof. Huddleston. 3–55 D.H.

A continuation of charcoal drawing from the antique with special work to meet the needs of the students in pen and ink sketching and rendering and modeling in clay from relief ornament and sculpture. Elective for all students.

Prerequisite—Drawing 63; 64 or 69. 2 drawing periods per week. 1st S.

64. Free-hand Drawing. Prof. Huddleston. 3–55 D.H.

For Mechanic Arts Sophomores.

Same as Drawing 63. *2 drawing periods per week. 2d S.*

64a. Advanced Free-hand Drawing. Prof. Huddleston. 3–55 D.H.

Same as Drawing 63a. *2 drawing periods per week. 2d S.*

NOTE.—The above subjects of Drawing 63, 63a, 64, and 64a are of special value to students who expect to enter the field of teaching, nature study or biological research and are elective for all students subject to such conditions as their respective divisions and the Head of the department of drawing may prescribe.

65. Architectural Drawing. Prof. Huddleston. 2–39 D.H.

Drafting room exercises devoted to an analytical study of house plans and modern methods of building construction followed by quarter-inch scale working drawings with necessary scale and full-size details for a small frame house designed by the student with reference to local conditions. For Mechanic Arts Juniors.

Prerequisites—Drawing 51 and Shop 60.

2 drawing periods per week. 1st S.

66. Architectural Drawing.

Prof. Huddleston and Mr. Laton. 2–39 D.H.

A continuation of Drawing 65 with special attention given to interior, exterior and framing details followed by a brief study of sheet metal and ornamental iron work. For Mechanic Arts Juniors.

Prerequisite—Drawing 65. *2 drawing periods per week. 2d S.*

67. House Planning. Prof. Huddleston and Mr. ———. 2–39 D.H.

Instruction is given in free-hand lettering; the use of drawing instruments; projection drawing as a study of the relation of views of a given object or structure; isometric drawing as a study of pictorial representation; together with the drawing of a simple house plan as a study in architectural representation. For Home Economics Freshmen.

2 drawing periods per week. 1st S.

68. House-Structure. Prof. Huddleston. 2–39 D.H.

A subject dealing with the house-structure considered from the standpoint of economics and of architecture. Lectures and recitations devoted to the study of the relation of the house plan to home making; to the individual family; individual site, garden and accessory buildings; supplemented by an analytical study of house plans with special reference to local conditions and the preparation of working drawings and details of a house designed by the student to conform to specified requirements. For Home Economics Freshmen.

Prerequisite—Drawing 67. Parallel—Home Economics 2.

1 Lec.; 1 drawing period per week. 2d S.

69. Free-hand Drawing. Prof. Huddleston. 3–55 D.H.

Pencil drawing from geometrical models as a study of proportion, form and free-hand perspective, followed by pencil and charcoal sketching from plaster casts of historic ornament and antique sculpture. For Home Economics Sophomores. *2 drawing periods per week. 1st S.*

70. Color and Design. Prof. Huddleston. 3–55 D.H.

The first half of the semester will consist of lectures on color theories, harmonies and qualities based on spectral colors and supplemented with studio work with water-color.

The second half of the semester will consist of lectures on the principles of design, supplemented by studio work of color problems applicable to home decorations and costume design.

The object of this subject is to give to students a working knowledge of color such as will help them to express themselves appropriately in their clothing as well as develop good taste in color selections for home decoration. For Home Economics Sophomores.

Prerequisites—Drawing 63; 64 or 69.

1 Lec.; 1 drawing period per week. 2d S.

72. Practical Mathematics. Mr. Laton. 2–49 D.H.

The instruction in this subject includes useful applications of algebra, geometry and the first principles of trigonometry and is directly related to practical problems the student will meet after he has finished his course. For Mechanic Arts Seniors.

Prerequisite—Drawing 66. *1 Rec. per week. 1st S.*

ECONOMICS.

ASST. PROF. MCKAY, MR. HAM.

1. Elementary Economics. Asst. Prof. McKay. 204 Lib.

This subject is designed to introduce the student into the broad field of economics: the kind and nature of wealth; its distribution among producers in the form of rent, wages, interest and profits; the part played by nature, by labor, and by capital in wealth production; the field of organized labor; the forms and relative advantages of different types of business organization, including corporations and trusts; the subject of markets and the forces which determine prices; the principles of credit, banking and foreign exchange; the tariff and taxation.

Two sections: one for Agricultural and Engineering Seniors; the other for Arts and Science and Mechanic Arts Sophomores.

1 Lec., 2 Rec. per week. 1st. S.

2. Geography of Commerce. Asst. Prof. McKay. 201 Lib.

This subject gives rather wide information regarding the facts and principles of commerce, and the commercial development of nations. The importance of natural physical conditions as determinants of commerce is emphasized, as well as that of transportation and exchange facilities. Ports and ocean trade routes are also considered. The more important commodities of commerce are studied and the regions of their production, their markets and prices. Finally a comparison is made of the principal commercial countries of the world. For Arts and Science Freshmen and Sophomores.

2 Lec., 1 Rec. per week. 2d S.

4. Money and Banking. Asst. Prof. McKay. 204 Lib.

A study of the principles of money; coinage and coinage laws; legal tender; the relation of money and prices; bimetallism; the kinds of banks and the services they render; the national banking systems of this and other countries, including our new Federal Reserve System. Elective for Arts and Science Juniors and Seniors and for Agricultural and Engineering Seniors.

Economics 4 and 6 are given in alternate years. Economics 4 will be given in 1918–1919.

Prerequisite—Economics 1. *2 Lec., 1 Rec. per week. 2d S.*

5. Labor Problems. Asst. Prof. McKay. 204 Lib.

This subject is concerned primarily with the problems of organized labor; strikes and their causes, lock-outs, boycotts, the open and closed shop, minimum wage, settlement of disputes by arbitration and other means; compensation for industrial accidents, and labor legislation. Some attention is given in this subject to such organizations as the American Federation of Labor and the Industrial Workers of the World, their ideals, aims and methods. Elective for Arts and Science Juniors and Seniors and Agricultural Seniors.

Economics 5 and 9 are given in alternate years. Economics 5 will be given in 1918–1919.

Prerequisite—Economics 1. *2 Lec., 1 Rec. per week. 1st S.*

6. Public Finance and Taxation. Asst. Prof. McKay. 204 Lib.

The subject-matter has to do with the costs of conducting governments, the methods of raising the necessary funds, including the great problems of taxation, the kinds of taxes, and the way they are distributed. Property, income and inheritance taxes, tariffs and internal revenue duties, the single tax and progressive taxes are considered. Elective for Arts and Science Juniors and Seniors and Agricultural and Engineering Seniors.

Economics 4 and 6 are given in alternate years. Economics 6 will be given in 1917–1918.

Prerequisite—Economics 1. *1 Lec., 2 Rec. per week. 2d S.*

8. Agricultural Economics. Asst. Prof. McKay. 204 Lib.

Economic problems in agriculture, such as prices of farm products, marketing, the produce exchanges, and speculation, co-operative organizations and rural credit, constitute the work of the semester. In addition, each member of the class is expected to make a special individual study of some topic in the field. Required for Agricultural Seniors. Elective for Arts and Science Juniors and Seniors.

Prerequisite—Economics 1. *1 Lec., 2 Rec. per week. 2d S.*

9. Corporation Finance. Asst. Prof. McKay. 204 Lib.

A study of the methods used to finance corporations; the various types of stocks and bonds; stock exchanges; underwriting; government regulation of corporations. Elective for Arts and Science Juniors and Seniors and Agricultural Seniors.

Economics 5 and 9 are given in alternate years. Economics 9 will be given in 1917–1918.

Prerequisite—Economics 1. *1 Lec., 1 Rec. per week. 1st S.*

Economics 13. Business Accounting. Mr. Ham. 107 T.H.

A study of the fundamental principles of accounting, first in private or individual business, then the partnership, and closing with the cor-

poration. Interpretation of accounts, business statements and records. The subject is intentionally made to cover a broad field that it may be of the greatest service to students from all three divisions, both men and women. Elective for Arts and Science Sophomores and Juniors, and for Seniors from all divisions.

2 Rec., 1 Lab. per week. 1st S.

Economics 14. Cost-Accounting. Mr. Ham. 107 T.H.

The study of cost-accounting as it operates in a modern manufacturing concern. The student handles and becomes familiar with the best cost-keeping forms and records. Careful study is made of costs, especial attention being given to overhead expense or burden, including the problems of depreciation and idle factor time. Elective for Arts and Science Sophomores and Juniors, and for Seniors from all divisions.

Prerequisite—Economics 13. *2 Rec., 1 Lab. per week. 2d S.*

Economics 15. Advanced Accounting Problems. Mr. Ham. 107 T.H.

Advanced theory of accounting supplemented with the solution of practical problems. Special study will be made of valuations, realizations, liquidations, insolvencies, executorships, and public utility accounting. This is largely a course in problems making practical application of the theory of previous courses. Elective for Arts and Science Juniors and Seniors.

Prerequisites—Economics 13 and 14. *3 Rec. per week. 1st S.*

Economics 16. Auditing Theory and Practice. Mr. Ham. 206 T.H.

Study of various kinds of audits, and their values; duties and responsibilities of the auditor; his report, certificates, etc. Special problems and model reports supplement the theory in the subject. Elective for Arts and Science Juniors and Seniors.

Prerequisite—Economics 13. *3 Rec. per week. 2d S.*

DEPARTMENT OF EDUCATION AND PSYCHOLOGY.

PROF. SIMMERS.

The training of teachers for high schools is recognized as being one of the important functions of New Hampshire College. In order to do this more adequately a department of education and psychology has been established which has as its aims:

1. To offer prospective high-school teachers, principals, and superintendents the necessary technical training for their profession.
2. To present educational history and problems in their more philosophic and scientific aspects so as to be valuable to all college students whether they become teachers or not.

To this end, it is expected that all students intending to teach will elect at least the following subjects in the department of education and

psychology, making a total of thirteen hours,—Education 1 or 3 or 6, and 2 and 5, Psychology 52 and 53.

The prospective teacher should also take either the general or teacher's course in agriculture, the manual arts course, or the course in home economics. Or, if registered in the Arts and Science division, he should elect a major and one or two minors in its several departments. The aim should be to attain as intensive and extensive scholarship as possible during the four years spent in college.

Education.

PROF. SIMMERS.

4. School Hygiene. Prof. Simmers. 211 T.H.

The physical welfare of the pupil is considered in relation to his moral, social and intellectual development. Hygiene of play, study, work, daily programs, the selection of school building site, heating, ventilation, medical inspection, communicable diseases, detection and treatment of defects of the senses, laws of fatigue and its relief and prevention, etc., are studied. Required of Manual Arts Juniors and Agricultural Seniors. Elective for all other students. Lectures, assigned readings and discussion. Junior subject. *2 Rec. per week. 2d S.*

5. Secondary Education. Prof. Simmers. 211 T.H.

A systematic study of secondary school problems is made. Some of the topics considered are: The proper place and function of the high school, its relation to the grades, college and practical life; methods of instruction, program of studies, examinations and promotions, educational values of the various studies, qualities of an efficient teacher, and relation to the various elements of the school community. Each student will be required to make systematic observations in schools near Durham. Required of Agricultural and Manual Arts Juniors. Elective for all other students. Lectures, assigned readings and discussion. Senior subject. *3 Rec. per week. 1st S.*

6. History and Theory of Industrial Education.

Prof. Simmers. 211 T.H.

Some of the topics considered are: Primitive industry and educational practice, Industrial activity in the monasteries, the apprenticeship system, the Fellenberg Institute at Hofwyl, the manual training, agricultural, and home economics movements; Federal and State legislation concerning industrial education, vocational guidance. Typical industrial, trade, evening, and continuation schools, of the United States will be studied. For Manual Arts Seniors. Elective for all other students. Lectures, assigned readings and discussion. Senior subject. *2 Rec. per week. 2d S.*

*** 7. Principles of Education.** Prof. Simmers. 211 T.H.

In this subject a general background for educational thought and practice is sketched. The biological, psychological, social, and ethical bases of education are considered. The aim is to give underlying principles and to show how they should function in the work of the grades and the high school. The subject is fundamental for those students intending to become principals or superintendents of schools. Elective for all students. Lectures, assigned readings and discussion. Senior subject.

Prerequisite—Psychology 52. *3 Rec. per week. 1st S.*

† 8. History of Education. Prof. Simmers. 211 T.H.

Before and during the Middle Ages. An attempt is made to show the relationship between the industrial, intellectual, social, philosophic, and religious ideals of the times, and the varying conceptions of aim, method, curricula, and organization of educational agencies. Required of Agricultural seniors. Elective for all other students. Lectures, assigned readings and discussion. Senior subject. *2 Rec. per week. 2d S.*

*** 9. Administration and Supervision.** Prof. Simmers. 211 T.H.

This subject is designed for students who contemplate engaging in administrative or supervisory work. It aims at a systematic study of organization and management of school systems, promotion of pupils, standards of efficiency, powers and duties of the board of education, school law, school finance, etc. Elective for all students who have taken the other subjects in education. Lectures, assigned readings and discussion. Senior subject. *2 Rec. per week. 1st S.*

Psychology 52, 53. *See* pages 118–119.

† 10. History of Education. Prof. Simmers. 211 T.H.

Modern Period. This subject is quite similar to Education 1 in aim and method of treatment. It deals with the progress of society and related educational problems from the time of Comenius (beginning of seventeenth century) to the present time. It also attempts to show the origin and evolution of present theory and practice in education. Required of Agricultural Seniors. Elective for all other students. Lectures, assigned readings and discussion. Senior subject.

2 Rec. per week. 2d S.

* Education 7 and 9 are given in alternate years. Education 7 is given in 1917–1918.

† Education 8 and 10 are given in alternate years. Education 8 is given in 1917–1918.

ELECTRICAL ENGINEERING.

PROF. HEWITT, ASST. PROF. HITCHCOCK, MR. WHIPPLE.

1. Dynamo Electric Machinery. Prof. Hewitt. 1–29 D.H.

This subject includes a general study of the various electrical quantities such as electromotive force, current, resistance, permeability of iron; the use of standard measuring instruments; direct and alternating current dynamos and motors including elementary theory. A large number of practical problems illustrate the applications of the above. One exercise per week is devoted to laboratory experiments illustrating the practical application of theory. For Electrical and Mechanical Juniors.

Prerequisites—Physics 52 and Mathematics 56.

3 Rec., 1 Lab. per week. 1st S.

2. Dynamo Electric Machinery. Asst. Prof. Hitchcock. 1–26 D.H.

A continuation of Electrical Engineering 1. A study of electrical measuring instruments, cells, batteries, electrolysis, electroplating, electrotyping, the elements of photometry and electric illumination, inductance, capacity, and elementary alternating currents. One exercise per week is devoted to laboratory experiments illustrating the practical application of theory. For Electrical and Mechanical Juniors.

Prerequisite—Electrical Engineering 1. 3 Rec. 1 Lab. per week. 2d S.

3. Telegraph and Telephone. Asst. Prof. Hitchcock. 1–26 D.H.

A study of the acoustic and electrical principles of telephony, transmitting and receiving apparatus, magneto and common-battery switchboards and accessories, selective party-line systems, intercommunicating systems, overhead and underground construction, phantom, simplex, and composite circuits, transpositions, etc. The principles of telegraphy, sounders, repeaters, etc. Wireless telegraphy and telephony. Automatic devices, electric signaling for purposes of alarms, railroads, etc. Elective. *1 Rec. per week. 1st S.*

6. Application of Electricity to Agriculture. Prof. Hewitt. 1–29 D.H.

Arranged for and adapted to students taking agriculture. The subject consists of a general study of the electric dynamo and motor, method of connecting same to the supply circuit and the care and operation of each; a general study of simple problems in transmission, methods of wiring for electric power and lighting; the telephone including the general principles upon which it operates and different systems of installation; electric bell wiring and signaling apparatus; simple water power developments and equipments; electrical utensils for domestic use, etc. Elective. *2 Rec., 1 Lab. per week. 2d S.*

9. Industrial Electricity. Prof. Hewitt. 1–29 D.H.

Arranged for and adapted to students taking the Mechanic Arts Course. Open only to Seniors in the Mechanic Arts Course.

2 Rec., 1 Lab. per week. 1st S.

11. Electrical Engineering Practice. Asst. Prof. Hitchcock. 1–26 D.H.

A study of the properties of periodic curves, the effects of inductance and capacity, the use of complex quantities, and a more detailed study of generators, motors, transformers, converters, and other electrical apparatus. For Electrical Seniors.

Prerequisite—Electrical Engineering 2. 4 Rec. per week. 1st S.

12. Electrical Engineering Practice. Prof. Hewitt. 1–29 D.H.

A continuation and completion of Electrical Engineering 11. Hydro-electric developments including the design of reinforced concrete dams and power houses and the general subjects of water-power engineering; high tension power transmission; design of transmission lines and distributing systems; selection of apparatus for generating stations and distributing systems; lightning protection. For Electrical and Mechanical Seniors.

Prerequisite—Electrical Engineering 11. 4 Rec. per week. 2d S.

14. Electric Railways. Asst. Prof. Hitchcock. 1–26 D.H.

The practicability of construction from an economic standpoint; determination of the size, type, and seating capacity of cars; track location; train schedules; methods of control; train resistance; speed-time and current-time curves; selection of motors; the feeder system; electrolysis; power station and substation location; storage batteries; electric track switches; etc. Illustrated by problems. For Electrical Seniors. *2 Rec. per week. 2d S.*

15. Electrical Laboratory.

Prof. Hewitt, Asst. Prof. Hitchcock. Basement D.H.

An advanced series of experiments. A written report will be required for which one additional credit hour will be given. For Electrical Seniors. *2 Lab. per week, 3 Hours' Credit. 1st S.*

16. Electrical Laboratory.

Prof. Hewitt, Asst. Prof. Hitchcock. Basement D.H.

A continuation of Electrical Engineering 15, with experiments of a more advanced nature. A written report will be required for which one additional credit hour will be given. For Electrical Seniors.

2 Lab. per week, 3 Hours' Credit. 2d S.

18. Thesis. Prof. Hewitt, Asst. Prof. Hitchcock.

A deposit of fifteen dollars to cover any damage done to instruments, apparatus, etc., is required in this subject. Any unexpended balance is

refunded at the close of the college year. Where apparatus is constructed as a part of a thesis, it shall remain the property of the department. Optional with head of department. For Electrical Seniors.

1 Rec., 2 Lab. per week. 2d S.

21. Industrial Electricity. Prof. Hewitt. 1–29 D.H.

A careful study of the principles and methods employed in electrical measurements; resistance of wire and batteries; current measurement by ammeters and electroylsis; the use of electrical measuring instruments; a series of laboratory experiments specially arranged to meet the requirements of chemical engineers. A brief study will be made of the dynamo, motor, transformer, primary and secondary batteries, arc and incandescent lamps and the general principles of electrical distribution. Experiments in electrolysis, electrical furnaces, reduction of metals, etc., are provided. For Chemical Seniors.

2 Rec., 1 Lab. per week. 1st S.

22. Industrial Electricity. Prof Hewitt. 1–29 D.H.

A continuation of Electrical Engineering 21, but more advanced in nature. For Chemical Seniors.

Prerequisite—Electrical Engineering 21.

2 Rec., 1 Lab. per week. 2d S.

24. Design of Electrical Machinery. Asst. Prof. Hitchcock. 1–28 D.H.

A study of the design of the more important electrical machines, including the calculation of the dimensions of the machine, both electrical and mechanical, and the predetermination of its performance from the dimensions. For Electrical Seniors.

Prerequisite—Electrical Engineering 11. 2 Lab. per week. 2d S.

26. Illuminating Engineering. Asst. Prof. Hitchcock. 1–26 D.H.

A theoretical discussion of the principles of illumination and the application of these principles to concrete examples. For Electrical Seniors who do not take Electrical Engineering 18. For other Electrical Seniors. *2 Rec. per week. 2d S.*

27. Contractors and Specifications. Prof. Hewitt. 1–29 D.H.

The laws and forms of engineering contracts; standard specifications for materials of construction and apparatus. Elective for Mechanical and Electrical Seniors. *1 Rec. per week. 1st S.*

30. Problems. Prof. Hitchcock. 1–26 D.H.

A large number of problems in both direct current and alternating current will be performed to illustrate the application of Electrical principles. Elective for Mechanical and Electrical Juniors.

1 Rec. per week. 1st S.

ENGLISH.

PROF. RICHARDS, PROF. SCOTT, ASST. PROF. SCUDDER, MR. CRAFTS, MR. RAYMOND.

51. English Composition.

I.	Prof. Richards.	205 T.H.
II.	Asst. Prof. Scudder.	208 T.H.
III.	Mr. Crafts.	205 T.H.

The chief aim of this subject is a thorough review of English grammar and syntax, particular stress being laid upon the fundamentals of composition; such as correct spelling, choice of words, and clearness of sentence structure. Short themes, both prepared and impromptu, and monthly reports upon outside reading, are required. For all Freshmen.

3 Rec. per week. 1st S.

52. English Composition.

I.	Prof. Richards.	205 T.H.
II.	Asst. Prof. Scudder.	208 T.H.
III.	Mr. Crafts.	205 T.H.

This subject aims at training the student in the principles of good writing and in the appreciation of good literature. A study is made of exposition, narration, description and argumentation, and frequent themes illustrating the functions of these kinds of writing are required. Monthly book reports, and a careful bibliography of the literature upon some topic suggested by the instructor, are submitted by each member of the class. Finally, the reading aloud in class of selections from contemporary literature is practiced frequently throughout the semester. For all Freshmen except Engineers who elect it in the first semester, Sophomore year. *3 Rec. per week. 1st and 2d S.*

53. Advanced Composition and Literary Criticism.

Prof. Richards. 205 T.H.

This is a subject in advanced English composition, in which the various forms of writing, such as the essay, the short story, the business letter, and book reviewing are treated. To supplement these exercises the student is required to read and criticize intelligently the writings of at least one noted prose writer and one poet, embodying the results in a carefully prepared essay at the close of the semester. For Mechanic Arts Sophomores. Elective for Arts and Science Sophomores and Juniors.

Prerequisites—English 51 and 52. *3 Rec. per week. 1st S.*

54. Introduction to English Literature. Prof. Richards. 211 T.H.

A general survey of English literature from the ninth to the twentieth century. To one who intends to teach English it is of fundamental importance. Lectures, recitations and outside reading constitute the work of the semester. Elective for all classes.

Prerequisite—English 52. *3 Rec. per week. 2d S.*

***55. The English Novel.** Prof. Richards. 205 T.H.

The historical development of the English novel and the chief characteristics of modern fiction are studied in this class. Lectures, recitations and extensive outside reading constitute the work of the semester. Elective for Arts and Science and Mechanic Arts Juniors and Seniors.

Prerequisites—English 51 and 52. *3 Rec. per week. 1st S.*

56. Argumentation and Debating. Prof. Richards. 205 T.H.

This subject offers training in the fundamental principles of oral debate and written argumentation, acquaints the student with the laws of parliamentary procedure, and introduces him to the rules and customs of state and national legislatures. An essential part of the study—in some respects the most valuable feature—is the practice in formal and extemporary debate, such debates being held at least once a week throughout the semester. Elective for Sophomores, Juniors and Seniors.

Prerequisites—English 51 and 52. *3 Rec. per week. 2d S.*

***57. Modern English Poetry.** Prof. Richards. 205 T.H.

A study is made of the great poems of English literature written between 1790 and 1890. While special attention is given to the poetry of Wordsworth, Tennyson and Browning, considerable outside reading is required in the works of Shelley, Keats, Rossetti, Arnold and other poets of the nineteenth century. Elective for Arts and Science and Mechanic Arts Juniors and Seniors.

Prerequisites—English 51 and 52. *3 Rec. per week. 1st S.*

58. History of the English Drama. Asst. Prof. Scudder. 208 T.H.

A survey of the English drama from its beginnings to the Closing of the Theaters. Constant reading of the plays with written criticisms and reports is required. Elective for Sophomores, Juniors and Seniors.

Prerequisite—English 52. *3 Lec. per week. 2d S.*

59. Chaucer. Prof. Richards. 205 T.H.

Lectures upon the life and times of Chaucer will be given, and the *Canterbury Tales* will be read and discussed in class. At the close of the study each student will hand in a thesis embodying the results of independent investigation of Chaucerian literature. For Seniors majoring in English.

Prerequisites—English 52, 54, 57, 62. *3 Rec. per week. 1st S.*

60. American Literature. Prof. Scott. 202 Lib.

Lectures and extensive outside reading. Elective for Arts and Science and Mechanic Arts Juniors and Agricultural Seniors.

Prerequisites—English 51 and 52. *4 Rec. per week. 2d S.*

*English 55 and 57 are given in alternate years. English 55 will be given in 1917–1918.

61. Modern English Prose. Prof. Richards. 205 T.H.

A study of English prose, exclusive of fiction, in the nineteenth century. Special attention will be paid to the writings of Lamb, Macaulay, Carlyle, Newman, Arnold, Ruskin and Frederic Harrison. Lectures will be given, and written reports at frequent intervals will be required. Elective for Arts and Science Juniors and Seniors.

Prerequisites—English 51 and 52. *3 Lec. per week. 1st S.*

62. Shakespeare's Plays. Prof. Richards. 205 T.H.

A study of all of Shakespeare's plays. Recitations and occasional dramatic representations of famous scenes. A large amount of reading required. Elective for Arts and Science Juniors and Seniors.

Prerequisites—English 51 and 52. *3 Lec. per week. 2d S.*

63. Writing for Publication. Asst. Prof. Scudder. 208 T.H.

A practical study of the preparation of articles for the newspapers and magazines. The student is taught to select the essential and present it tellingly. It is for all whose vocation will demand frequent writing for publication, and as a preparation in part for those who intend to take up newspaper work after graduation. It does not cover the entire field of journalism, but the student will be instructed in the duties of a reporter and be given constant practice in writing news stories. Elective for those who have attained a grade of C or higher in English 52.

Prerequisites—English 51 and 52 (with the added provision indicated above). *3 Rec. per week. 1st S.*

66. The Teaching of High School English. Prof. Richards. 211 T.H.

This subject is especially designed for those who major in English. The English classics taught in the high schools are read and discussed from the viewpoint of the teacher, and the different methods of presenting the epic, novel, drama and short story are studied and practised. Elective for Arts and Science Seniors.

Prerequisites—English 50 and 62. *1 Lec. per week. 2d S.*

ENTOMOLOGY.

PROF. O'KANE, MR. CLEVELAND.

1. Principles of Economic Entomology. Prof. O'Kane. 213 T.H.

The relation of the structure and classification of insects to methods of insect control. The preparation and application of insecticides. Spray machinery and appliances. For Agricultural Sophomores. Elective for Arts and Science Sophomores, Juniors and Seniors.

2 Rec., 1 Lab. per week. 1st S.

2. Insects of Orchard and Garden. Mr. Cleveland. 213 T.H.

The application of methods of insect control to typical injurious species. Studies in the life histories and habits of important insect pests of orchard, garden and certain field crops. Adapted especially for students in Horticulture and in General Agriculture. Elective for Agricultural and for Arts and Science Juniors and Seniors.

Prerequisite—Entomology 1. *1 Lec., 1 Lab. per week. 2d S.*

3. Insects of Domestic Animals. Mr. Cleveland. 213 T.H.

The insect enemies of domestic live stock; their life histories, habits and means of control. Adapted especially for students in Animal Husbandry. Elective for Agricultural and for Arts and Science Juniors and Seniors.

Prerequisite—Entomology 1. *1 Lec., 1 Lab. per week. 1st S.*

4. Household Insects. Medical Entomology.
Prof. O'Kane, Mr. Cleveland. 213 T.H.

The life histories, habits and means of control of insects of the household and of stored products. The relation of insects to disease. Adapted especially for students in Home Economics. Elective for Arts and Science Sophomores, Juniors and Seniors, and for Agricultural Juniors and Seniors. *2 Lec. per week. 2d S.*

5. Advanced Economic Entomology. Prof. O'Kane. 213 T.H.

Detailed studies of problems involved in applied entomology. The literature of economic entomology. Investigational methods. Practice in arranging projects. Original investigations in the life history and habits of one or more injurious species. Adapted for advanced students. Elective for Agricultural and for Arts and Science Juniors and Seniors. Open to students only by permission of head of department. Credit and hours to be arranged. 1st S.

6. Advanced Economic Entomology. Prof. O'Kane. 213 T.H.

Continuation of Entomology 5. 2d S.

7. Forest Insects. Mr. Cleveland. 213 T.H.

Studies in the life histories and habits of the more destructive forest insects and their means of control. Especially adapted for students in Forestry. Elective for Agricultural and for Arts and Science Juniors and Seniors.

Prerequisite—Entomology 1. *1 Lec., 1 Lab. per week. 1st S.*

FORESTRY.

PROF. WOODWARD, MR. GAMASH.

1. Principles of Forestry. Prof. Woodward. 202 M.H.

This subject is intended to give the student a general knowledge of orestry; relation to forests of soil, moisture, light and climatic conditions; the important systems of treating woodlands practised in Europe and the United States; the habits of important economic timber trees and the character and uses of these woods; the preparation f forest maps and working plans, including rough estimates of standing imber and the rate of growth of different stands; the artificial regeneration of forests by seeding and planting; forest fires; the forest regions f the United States; the practise of forestry by the federal and state overnments. For all Agricultural Sophomores. Elective for other tudents. *2 Lec., 1 Lab. per week. 1st S.*

2. Silviculture. Prof. Woodward. 202 M.H.

The establishment of forests through artificial regeneration; value of ifferent species; seed collecting; testing and storage; nursery work; irect seeding; planting; care of plantations; cost of establishing plantations; planting plans. Supplemented by actual nursery and planting ork. For Forestry Juniors. Elective for other students.
Prerequisite—Forestry 55. *2 Lec., 1 Lab. per week. 2d S.*

3. Dendrology. Mr. Gamash. 202 M.H.

A study of the habits, distribution and characteristics of the native ees and important introduced trees of the Northeastern States, in oth summer and winter conditions, and with particular reference to he prominent and constant features which lead to ready identification; nd a general study of the important timber trees of the United States, ncluding the structure of their woods. For Forestry and Mechanic rts Juniors. Elective for other students who have taken Botany 51 nd 52. *2 Lec., 1 Lab. per week. 1st S.*

4. Forest Mensuration. Mr. Gamash. 202 M.H.

Methods of determining the contents and growth of individual trees nd of whole forests by different units; use of log rules and the measurement of logs and felled trees; the measurement of standing trees; ethods of timber estimating; study of growth in diameter; height, nd volume; construction and use of volume and yield tables. This ubject calls for the use of forest instruments and actual practice in easuring trees and whole stands. For Forestry Juniors. Elective or other students. *2 Lec., 1 Lab. per week. 2d S.*

55. Silviculture. Prof. Woodward. 202 M.H.

A study of the life history of trees; the relation of the different species to light, moisture, soil, temperature and to each other in the forest; reproduction of trees, form and character of stands; the origin and determination of forest types; forest maps; relation of forests to stream-flow; forest descriptions; the improvement of the forest through use and proper treatment; the various systems of cutting and reproducing forests by natural means as practised in Europe and the United States, supplemented by frequent woods practise and demonstrations. For Forestry Juniors. Elective for other students who are taking Forestry 53. *2 Lec., 2 Lab. per week. 1st S.*

56. Forest Management. Prof. Woodward. 202 M.H.

The economic principles underlying the management of forests; the calculation of present and future values of forest property based on productive power; financial considerations of forest management; taxation of forest land; preparation of working plans in Europe, India, and the United States. Includes collateral reading, writing on forestry subjects and discussions. For Forestry Seniors.

Prerequisites—Forestry 52, 53, 54, 55 and 57.

2 Lec., 2 Lab. per week. 2d S.

57. Forest Protection. Prof. Woodward. 202 M.H.

Consideration of practical measures for the protection of forests from fire, insects, fungous diseases, grazing, trespass, and destructive lumbering; and an examination of the federal and state laws relating to forest interests. For Forestry Seniors.

Prerequisites—Forestry 52, 53, 54, and 55. *2 Lec. per week. 1st S.*

58. Advanced Forestry. Prof. Woodward. 202 M.H.

Elective for Forestry Seniors.

Prerequisites—Forestry 52, 53, 54, 55, 57, and 59.

3 Lab. per week. 2d S.

59. Advanced Forestry. Prof. Woodward. 202 M.H.

Work to be arranged according to the needs of individual students. Elective for Forestry Seniors.

Prerequisites—Forestry 52, 53, 54, and 55. *3 Rec. per week. 1st S.*

60. Forest Utilization. Prof. Woodward. 202 M.H.

Advanced elective subject for Mechanic Arts Juniors or Seniors. Work to be arranged to meet the needs of individual students.

Prerequisite—Forestry 53. *3 Rec. per week. 2d S.*

62. Practice of Forestry. Prof. Woodward. 202 M.H.

Development and present status of forestry in different countries; the work of the federal government and its management of the national

forests; state forest policies; the lumber industry in the United States; the application of forestry to different regions. For Forestry Seniors. Lectures and Special Readings.

Prerequisites—Forestry 52, 53, 54, and 55. *3 Lec. per week.* *1st S.*

64. Town Forest Problems. Prof. Woodward. 202 M.H.

A detailed study of the forest problems of his home town for one who has had Forestry 51. Aimed to prepare those who are planning to settle in a definite locality to become expert in timber estimating and valuation, and artificial and natural regeneration in that locality. Individual conferences and reports.

Prerequisite—Forestry 51. *2 Rec. per week.* *2d S.*

FRENCH.

PROF. WHORISKEY, MR. CULVER, MR. RAYMOND.

1. Elementary French. Mr. Culver. 102 T.H.

Elements of French Grammar. Reading of simple stories; conversation and dictation. Elective for Arts and Science students.

3 Rec. per week. *1st S.*

2. A continuation of French 1. Mr. Culver, Mr. Raymond. 102 T.H.

Elective for Arts and Science students. *3 Rec. per week.* *2d S.*

3. French Prose. Prof. Whoriskey, Mr. Culver. 107 T.H.

Reading and translation; composition; outside reading. Elective for Arts and Science Sophomores. Freshmen who have offered French for admission are allowed to take French 3 and 4.

Prerequisite—French 2. *3 Rec. per week.* *1st S.*

4. A continuation of French 3. Mr. Culver. 107 T.H.

Prerequisite—French 3. *3 Rec. per week.* *2d S.*

***5. French Literature of the Nineteenth Century.**

Mr. Culver. 107 T.H.

Selections from Hugo, Balzac, Sand, Dumas père, Daudet, Gautier. Composition. Elective for Arts and Science students.

Prerequisite—French 4. *3 Rec. per week.* *1st S.*

***6. A continuation of French 5.** Mr. Culver. 107 T.H.

Elective for Arts and Science students.

Prerequisite—French 5. *3 Rec. per week.* *2d S.*

* French 7 and 8 will be given in 1917–1918 and in alternate years with French 5 and 6

***7. French Literature of the Seventeenth Century.**
Mr. Culver. 107 T.H.

Lives and works of the following: Corneille; Racine; Molière; Bossuet; Boileau; Mme. de Sévigné; La Fontaine. Composition. Elective for Arts and Science students.

Prerequisite—French 4. *3 Rec. per week. 1st S.*

***8. A continuation of French 7.** Mr. Culver. 107 T.H.

Elective for Arts and Science students.

Prerequisite—French 7. *3 Rec. per week. 2d S.*

9. French Composition and Conversation. Mr. Culver. 107 T.H.

Elective for Arts and Science students. Recommended for those desiring to teach. *3 Rec. per week.*

10. French Composition and Conversation. Mr. Culver. 107 T.H.

A continuation of French 9. *3 Rec. per week.*

GEOLOGY.

PROF. JACKSON, MR. BATCHELDER.

51. Elementary Geology. Mr. Batchelder. 212 T.H.

The elements of geology. Special attention is given to local geology and excursions are made to various points of interest in the vicinity. For Agricultural Juniors. Elective for Mechanic Arts Juniors and Arts and Science Juniors and Seniors. *3 Rec. per week. 1st S.*

52. Historical Geology. Prof. Jackson. 212 T.H.

The development of the continents of the earth and the evolution and distribution of the animal and plant forms from the earliest times to the present. Recitations, lectures and laboratory work. Elective for Agricultural and Arts and Science Seniors.

Prerequisites—Zoölogy 51, 52 and Geology 51.
2 Rec., 1 Lab. per week. 2d S.

GERMAN.

PROF. WHORISKEY, MR. RAYMOND, MR. CRAFTS.

1. Elementary German.
Prof. Whoriskey, Mr. Raymond, Mr. Crafts. 107 T.H.

Elements of German grammar. Reading of simple stories; conversation; singing of German folk-songs. For Chemical Engineering Freshmen who have not offered German for admission. Elective for others.
3 Rec. per week. 1st S.

*French 7 and 8 will be given in 1917–1918 and in alternate years with French 5 and 6.

2. Elementary German.
Prof. Whoriskey, Mr. Raymond, Mr. Crafts. 107 T.H.

A continuation of German 1. For Chemical Engineering Freshmen who have not offered German for admission. Elective for others.
3 Rec. per week. 2d S.

3. German Prose. Prof. Whoriskey, Mr. Raymond. 107 T.H.

Reading and translation. For Chemical Engineering Sophomores. Elective for others. Freshmen who have offered German for admission are allowed to take German 3 and 4. *3 Rec. per week. 1st S.*

4. German Prose. Prof. Whoriskey. 107 T.H.

A continuation of German 3. Reading and Translation of Hauff's Lichtenstein and similar books. Elective.
Prerequisite—German 3. *3 Rec. per week. 2d S.*

***5. Goethe.** Prof. Whoriskey. 107 T.H.

His life and works. The following books are read and criticized: 1. Hermann und Dorothea; 2. Iphigenie; 3. Torquato Tasso; 4. Egmont; 5. Götz von Berlichingen; 6. Dichtung u. Wahrheit (in part); 7. Die Leiden des jungen Werters; 8. Faust, Part I. Elective for Arts and Science students.
Prerequisite—German 4. *3 Rec. per week. 1st S.*

***6. Goethe.** Prof. Whoriskey. 107 T.H.

A continuation of German 5. Elective for Arts and Science students.
Prerequisite—German 5. *3 Rec. per week. 2d S.*

***7. Schiller.** Prof. Whoriskey. 107 T.H.

His life and works. The following books are read and criticized: 1. Wilhelm Tell; 2. Maria Stuart; 3. Die Jungfrau; 4. Die Braut von Messina; 5. Wallenstein; 6. Don Carlos; 7. Geschichte d. 30 jährigen Krieges; 8. Ballads. Elective for Arts and Science students.
Prerequisite—German 4. *3 Rec. per week. 1st S.*

***8. Schiller.** Prof. Whoriskey. 107 T.H.

A continuation of German 7. Elective for Arts and Science students.
Prerequisite—German 7. *3 Rec. per week. 2d S.*

†9. German Composition and Conversation.
Prof. Whoriskey. 107 T.H.

Elective for Arts and Science students. Both aural and oral training are given in German 9, 10, 11 and 12, and opportunity is given to teach under supervision. *3 Rec. per week. 1st S.*

* German 5 and 6 are to be given in 1917–1918, German 7 and 8 in 1918–1919, and German 13 and 14 in 1919–1920.

† German 9, 10, 11 and 12 will not be given in 1917–1918.

†10. A continuation of German 9. Prof. Whoriskey. 107 T.H.
3 Rec. per week. 2d S.

†11. German Composition and Conversation.
Prof. Whoriskey. 107 T.H.
Elective. *3 Rec. per week. 1st S.*

†12. A continuation of German 11. Prof. Whoriskey. 107 T.H.
Elective. *3 Rec. per week. 2d S.*

***13. Sudermann.** Prof. Whoriskey. 107 T.H.
The following books are read and criticized: 1. Frau Sorge; 2. Der Katzensteg; 3. Teja; 4. Heimat; 5. Johannes; 6. Frenssen's Jörn Uhl. Elective for Arts and Science students.
Prerequisite—German 4. *3 Rec. per week. 1st S.*

***14. Sudermann and His Contemporaries.**
Prof. Whoriskey. 107 T.H.
A continuation of German 13.
Prerequisite—German 13. *3 Rec. per week. 2d S.*

16. Scientific German. Mr. Raymond. 107 T.H.
For Chemical Engineering Sophomores. *3 Rec. per week. 2d S.*

HISTORY.

PROF. SCOTT, ASST. PROF. MCKAY.

In the subjects in history an important place is given to historical reading carried on in the reference room. In some cases a considerable part of the work is written.

1. History of Europe from 476 to 1492. Prof. Scott. 202 Lib.
Recitations and collateral reading. Elective for Arts and Science Freshmen and Mechanic Arts Juniors. *3 Rec. per week. 1st S.*

2. History of Europe from 1492 to 1715. Prof. Scott. 202 Lib.
Recitations and collateral reading. Elective for Arts and Science and Mechanic Arts Freshmen. *3 Rec. per week. 2d S.*

3. History of Europe from 1715 to 1815. Asst. Prof. McKay. 204 Lib.
Recitations and collateral reading. Elective for Arts and Science Sophomores.
Prerequisite—History 1. *3 Rec. per week. 1st S.*

* German 5 and 6 are to be given in 1917–1918, German 7 and 8 in 1918–1919, and German 13 and 14 in 1919–1920.

† German 9, 10, 11 and 12 will not be given in 1917–1918.

4. History of Europe since 1815. Asst. Prof. McKay. 204 Lib.

Recitations and collateral reading. Elective for Arts and Science Sophomores.

Prerequisite—History 2 or History 3. *3 Rec. per week. 2d S.*

5. American History to 1801. Prof. Scott. 202 Lib.

Elective for Arts and Science Juniors and Mechanic Arts Seniors.

3 Rec. per week. 1st S.

6. Political and Constitutional History of the United States from 1801 to 1861. Prof. Scott. 202 Lib.

Elective for Arts and Science Juniors and Mechanic Arts Seniors.

3 Rec. per week. 2d S.

7. Political and Constitutional History of the United States since 1860. Prof. Scott. 202 Lib.

Elective for Arts and Science Seniors.

Prerequisite—History 6. *3 Rec. per week. 1st S.*

HOME ECONOMICS.

MISS KNOWLTON, MISS REINER, MISS LIVINGSTON.

1. Personal Hygiene. Miss Knowlton. 105 T.H.

A short study of the laws of health; the means of improving the physical and mental efficiency of the body; individual responsibility for race progress. Required of all women Freshmen.

1 Rec. per week. 1st S.

2. The House. Miss Reiner. 105 T.H.

Its location, drainage. Outline house-plans. Wall and floor finishes. The plumbing, heating, lighting, and ventilation of the house. Labor-saving devices. Cleaning processes and care of furniture. Social forms and usages. For Home Economics Freshmen.

Prerequisite—Drawing 67.

Parallel—Drawing 68. *2 Rec. per week. 2d S.*

3. Elementary Clothing. Miss Livingston. 105 T.H.

The fundamental stitches used in the making of household linens and undergarments. Elementary drafting, cutting and plain hand and machine sewing, with application to useful made-at-home garments. For Home Economics Freshmen. *1 Lab. per week. 1st S.*

4. Elementary Clothing, Continued. Miss Livingston. 105 T.H.

Elementary drafting continued and adaptation of patterns; cutting, fitting and finishing simple undergarments. Knitting, crocheting, and simple embroidery; darning and mending. Special attention to costs as compared with ready-to-wear garments. Students provide all material subject to the approval of the instructor. For Home Economics Freshmen. *1 Lab. per week. 2d S.*

5. Home Economics in History. Miss Reiner. 105 T.H.

This subject is intended to trace the historical aspects of the different phases of Home Economics, with especial emphasis on the history of cookery. Open to Juniors and Senior Home Economics students, and to other Junior and Senior students by special permission.

2 Rec. per week. 1st S.

6. Textiles. Miss Livingston. 105 T.H.

The textile fibers: their sources, production and uses; study of their physical and chemical properties. Examination of the fibers and weaves of woven fabrics. Judging of textile fabrics in regard to durability, cost and suitability for household or for personal purposes. Laundering and cleaning fabrics. Expense for trips and supplies about $1.50.

Prerequisite—Chemistry 56. 1 Rec., 1 Lab. per week. 2d S.

7. Foods, and Principles of Cooking.

Miss Reiner, Miss Livingston. 105 T.H.

Composition and nutritive value of food-stuffs and of foods. Effects of heat and cold upon food-stuffs; food preservation and storage. Leavening agents. Laboratory practice in the principles of cooking. The cost and nutritive value of the foods prepared. Comparative economy of foods. For Home Economics Sophomores.

Prerequisites—Chemistry 56, Home Economics 3 or equivalent, high school Physics, or equivalent. 2 Rec., 2 Lab. per week. 1st S.

8. Foods, and Principles of Cooking, Continued.

Miss Reiner. 105 T.H.

Preparation and service of meals; cost per person. Entertainment of guests. For Home Economics Sophomores.

Prerequisite—Home Economics 7. 2 Rec., 2 Lab. per week. 2d S.

10. Draping, Drafting and Elementary Dressmaking.

Miss Livingston. 105 T.H.

Practice given in drafting, cutting, fitting and designing of patterns. Drafting of a tight-fitting lining and draping of original and copied designs in cheese cloth and other suitable materials. Students provide all materials. Home Economics Juniors.

Prerequisites—Home Economics 3, 4 and 6, Drawing 69 and 70.

2 Lab. per week. 2d S.

11. Principles of Human Nutrition. Miss Knowlton. 105 T.H.

Composition of the body; its relation to the physical universe. The composition, digestion, absorption, assimilation and oxidation of food-stuffs. The physiological fuel value of food-stuffs. Methods of investigation employed in the study of human nutrition. The food

requirements of the body as influenced by activity, size, age, sex. Problems throughout the semester. It is hoped that a trip to Boston can be included. Cost about $5. For Home Economics Juniors.

Prerequisites—Home Economics 8, Chemistry 57, Zoölogy 57.

3 Rec. per week. 1st S.

12. Nutrition and Dietetics. Miss Knowlton. 105 T.H.

Continuation of Home Economics 11. Problems in dietary calculations. Comparative physiological fuel values of foods. Application of the principles of human nutrition in the adaptation of diet to varying physiological, social and economic conditions. For Home Economics Juniors.

Prerequisite—Home Economics 11. *2 Rec., 1 Lab. per week. 2d S.*

13. House Decoration. Miss Reiner. 105 T.H.

Applications of theory of color, and of design in house decoration. Selection of house furnishings; study of values; estimation of costs, and comparisons of sanitary and artistic furnishings. For Home Economics Juniors.

Prerequisites—Drawing 69, 70, Home Economics 2, 6.

2 Rec. per week. 1st S.

15. Dressmaking. Miss Livingston. 105 T.H.

The course includes the making of a silk shirt waist, a wool skirt, and a lingerie dress. Discussion and application to clothing of the theory of color and design. Students provide all material subject to the approval of the instructor.

Prerequisites—Home Economics 3, 4, 6 and 10, Drawing 69 and 70.

2 Lab. per week. 1st S.

19. Household Administration. Miss Knowlton. 105 T.H.

Evolution of the home; standards of living; expenditure of the income; organization of the household. Household and personal accounts. Care of the house and family; domestic service. Home nursing. For Home Economics Seniors.

Prerequisites—Home Economics 10, 12, Economics 1, Zoölogy 58, Botany 55. *3 Rec. per week. 1st S.*

21. Senior Problems in Home Economics.

Miss Knowlton. 105 T.H.

Problems may be in experimental cookery, dietetics, textiles, economics of family. Elective for Home Economics Seniors.

Prerequisites—Home Economics 12, and 10.

Parallel—Home Economics 19. *2 Rec. per week. 1st S.*

22. Seminar. Miss Knowlton. 105 T.H.

Discussion and reports on recent work in Home Economics. Required of Home Economics Seniors. *1 Lab. per week. 2d S.*

24. Teachers' Course. Miss Knowlton. 105 T.H.

Development of Home Economics. Planning of courses epecially for secondary schools; outlines of lessons and methods of presentation; selection of equipment. Visiting Home Economics classes. Elective for Home Economics Seniors.

Prerequisite—Home Economics 10, 12, 13, 19.

1 Rec., 1 Lab. per week. 2d S.

26. Foods and Nutrition. Survey Subject. Miss Knowlton. 105 T.H.

Open to any Seniors (other than Home Economics) in the college who desire a general knowledge of foods and nutrition. Lectures will include a discussion of foods, food preparation, and human nutrition. Elective for all divisions. *2 Rec. per week. 2d S.*

HORTICULTURE.

PROF. GOURLEY, ASSOC. PROF. WOLFF, ASST. PROF. SCHERRER, MR. MACFARLANE.

52. Vegetable Gardening. Asst. Prof. Scherrer. 202 M.H.

This subject is designed to give a working knowledge of the various phases of vegetable production. It includes a study of garden soils, germination and planting of seeds, selection of varieties with reference to the conditions of the state, construction and management of hot beds and cold frames, fertilizing, irrigation, packing and marketing of vegetables. For Agricultural Sophomores.

1 Rec., 1 Lab. per week. 2d S.

53. Greenhouse Construction and Management.

Asst. Prof. Scherrer. 202 M.H.

This subject aims to familiarize the student with modern methods of greenhouse work and the more important plants grown under glass. Sorts, varieties, culture, marketing, and enemies of greenhouse plants are studied. Each student is required to do practical work in propagating, potting, watering, and ventilating. A study is made of the history and development of different types of greenhouses, including methods of heating and general management. Required in Horticultural Course, Junior year. Elective in other Agricultural Courses.

1 Lec., 1 Rec., 1 Lab. per week. 1st S.

54. Practical Pomology. Assoc. Prof. Wolff. 202 M.H.

A study of the fundamental problems of fruit growing, such as location, choice of site, kind and adaptability of soil for fruit growing, soil management, planting of orchards, pruning, sprays and spraying, thinning, harvesting and marketing. For Agricultural Sophomores.

2 Rec., 1 Lab. per week. 2d S.

55. Systematic Pomology and Commercial Orcharding.
Prof. Gourley. 202 M.H.

The first eight weeks of the semester are devoted to a study of the leading varieties of fruits and their adaptations, with special reference to New England conditions. During the remainder of the semester this subject deals with the management of commercial orchards, problems of marketing, packing, transportation and coöperation. Special study is given to the experimental data on maintaining soil fertility in the orchard and on other fundamental factors in orchard management. In the laboratory special instruction is given to the packing of apples for market and judging fruit. Required in Horticultural Course, Senior year. *3 Rec., 1 Lab. per week. 1st S.*

56. Landscape Gardening. Asst. Prof. Scherrer. 202 M.H.

A study of the principles involved in ornamental and landscape gardening. Special attention is given to the beautifying of home surroundings. Laboratory work consists in landscape design and practice in laying out and planting home and public grounds. Required in Horticultural Course, Junior year. Elective in other Agricultural Courses.
1 Lec., 1 Rec., 1 Lab. per week. 2d S.

58. Nursery Management. Assoc. Prof. Wolff. 202 M.H.

A study of the methods of propagation and the care of trees, shrubs and perennial plants in the nursery. Lectures, reference readings and practice. Required in Horticultural Course, Junior year. Elective in other Agricultural Courses. *2 Rec., 1 Lab. per week. 2d S.*

60. Floriculture. Mr. Macfarlane. 202 M.H.

A special study of the classification, history and development of the flowers and plants grown commercially and about the home, together with instruction and practice in their propagation and culture. Required in Horticultural Course, Junior year. Elective for others.
Prerequisites—Botany 51 and 52. *1 Rec., 1 Lab. per week. 2d S.*

62. Horticultural Seminar. Prof. Gourley. 202 M.H.

A review of the important horticultural literature and methods of investigational work. Required in Horticultural Course, Senior year. Elective in other Agricultural Courses.
One seminar meeting per week. 2d S.

64. Evolution and Improvement of Plants. Prof. Gourley. 202 M.H.

The applications of the principles of evolution to the improvement of plants. Variation, selection and heredity as applied to the problems of plant breeding in agricultural practice. Required in Horticultural and General Agricultural Courses, Senior year. Elective in other Agricultural Courses.
Prerequisites—Botany 51 and 52. *2 Rec. per week. 2d S.*

65. Advanced Horticulture. Prof. Gourley. 202 M.H.

Special work in horticulture. May be taken by special arrangement with the head of the department. Prerequisites will depend on the work taken. Elective for Horticultural and General Agricultural Seniors.

Two to five exercises per week. Time to be arranged. 1st S.

66. Advanced Horticulture. Prof. Gourley. 202 M.H.

A continuation of Horticulture 65. Special arrangement must be made with the head of the department for this work. Elective for Horticultural and General Agricultural Seniors. Time and credit to be arranged.

Two to five exercises per week. 2d S.

68. Vegetable Forcing. Asst. Prof. Scherrer. 202 M.H.

A subject dealing with a study of special vegetables as grown under glass. Emphasis is placed upon the commercial phases of the work, including varieties, culture, style of packages, and marketing. Each student is required to grow crops from seeding to maturity. In addition, a study of vegetable classification is given. For Horticultural Juniors. Elective in other Agricultural Courses. *1 Lec., 2 Lab. per week. 2d S.*

LATIN.

PROF. WHORISKEY, MR. CULVER.

1. Livy (Book I). Mr. Culver. 102 T.H.

Elective for Arts and Science students who have offered Advanced Latin for entrance. *3 Rec. per week. 1st S.*

2. Horace (Odes and Epodes). Mr. Culver. 102 T.H.

Prerequisite—Latin 1. *3 Rec. per week. 2d S.*

MATHEMATICS.

PROF. PETTEE, ASSOC. PROF. MOORE, ASSOC. PROF. STECK, MR. GARABEDIAN.

***51a. Algebra and Trigonometry.**
I. Assoc. Prof. Moore. D.H.
II. Assoc. Prof. Steck. D.H.
III. Mr. Garabedian. D.H.

The first part of the semester is devoted to a brief review of fundamental principles, a more advanced presentation of linear and quadratic equations, followed by an introduction to determinants, variation and logarithms. The remainder of the semester is given to plane trigonometry. For Agricultural and Mechanic Arts Freshmen. Elective for Arts and Science Freshmen. *4 Rec. per week. 1st S.*

* Arts and Science students who intend to take up the study of Analytic Geometry should elect Mathematics 51b and not Mathematics 51a.

***51b. Trigonometry and Analytic Geometry.**

I. Assoc. Prof. Moore. D.H.
II. Assoc. Prof. Steck. D.H.
III. Mr. Garabedian. D.H.

A portion of the semester is devoted to algebra and plane trigonometry. During the remainder of the semester the student begins a study of the elements of plane analytic geometry. For Engineering Freshmen. Elective for Arts and Science Freshmen. *4 Rec. per week. 1st S.*

52. Analytic Geometry.

I. Assoc. Prof. Moore. D.H.
II. Assoc. Prof. Steck. D.H.
III. Mr. Garabedian. D.H.

A continuation of Mathematics 51b, presenting the elements of both plane and solid analytic geometry, Cartesian and polar coördinates, the straight line, circle, and the conic sections; special emphasis placed on methods of analysis as illustrated by loci problems. For Engineering Freshmen. Elective for Arts and Science Freshmen.

Prerequisite—Mathematics 51b. *3 Rec. per week. 2d S.*

53. Solid Geometry.

I. Assoc. Prof. Moore. D.H.
II. Assoc. Prof. Steck. D.H.
III. Mr. Garabedian. D.H.

The elements of solid and spherical geometry including original demonstrations and the solution of numerical problems. For Engineering and Mechanic Arts Freshmen. Elective for Agricultural and Arts and Science Freshmen. *2 Rec. per week. 1st S.*

54. Surveying.

I. Assoc. Prof. Moore. D.H.
II. Assoc. Prof. Steck. D.H.
III. Mr. Garabedian. D.H.

Recitations and field work surveying with chain, compass, transit, sextant and plane table; adjustment, care and proper method of using these instruments; the methods of determining areas; levelling for profiles and contours; computing from field notes taken in connection with the work. For Agricultural and Mechanic Arts Freshmen. Elective for Arts and Science Freshmen.

Prerequisite—Mathematics 51a or 51b.

Two Rec. per week for the first half of the semester. Two field exercises per week for the remainder of the semester. *2d S.*

55. Calculus.

I. Assoc. Prof. Moore. D.H.
II. Assoc. Prof. Steck. D.H.

A continuation of Mathematics 66 with special applications to engineering problems. The simple methods of integration. For Engineering Sophomores. Elective for Arts and Science Sophomores.

Prerequisite—Mathematics 52. *3 Rec. per week. 1st S.*

* Arts and Science students who intend to take up the study of Analytic Geometry should elect Mathematics 51b and not Mathematics 51a.

56. Calculus. { I. Assoc. Prof. Moore. D.H. / II. Assoc. Prof. Steck. D.H.

A continuation of Mathematics 55, including the determination of length, area, volume, mass, mean density, center of gravity, etc., by the methods of the integral calculus.

Prerequisite—Mathematics 55. *3 Rec. per week.* *2d S.*

57. Differential Equations. Assoc. Prof. Steck. D.H.

Devoted to the study of ordinary differential equations, especially those of the first and second orders, with applications to geometry, physics, and mechanics. Offered in alternate years. Given in 1917–1918.

Prerequisite—Mathematics 56. *2 Rec. per week.* *1st S.*

58. Advanced Calculus. Assoc. Prof. Steck. D.H.

A study of some of the more advanced topics of differential and integral calculus with applications to the solution of problems. Elective for Juniors and Seniors who have completed Mathematics 56. Offered in alternate years. Given in 1918–1919. *2 Rec. per week.* *2d S.*

59. Theory of Equations. Assoc. Prof. Moore. D.H.

Comprises the general properties of polynomials and equations, the relation between the roots and coefficients with applications to the symmetric functions of the roots, the transformation of equations, the solution of cubic, biquadratic, binominal, and reciprocal equations, the properties of the derived functions, the limits and the separation of the roots, and the solution of higher numerical equations. Offered in alternate years. Given in 1918–1919.

Prerequisite—Mathematics 56. *2 Rec. per week.* *1st S.*

60. History of Mathematical Science. Assoc. Prof. Moore. D.H.

Designed to acquaint those who intend to teach mathematics with the development of algebra, geometry, trigonometry, analysis and calculus. Lectures, assigned readings and recitations. Offered in alternate years. Given in 1917–1918.

Prerequisite—Mathematics 56. *2 Rec. per week.* *2d S.*

64. Theory and Practice of Surveying. Assoc. Prof. Moore. D.H.

Arranged for Seniors in the Mechanical and Electrical Engineering Courses, in which a study is made of the engineer's transit, wye-level, and compass; the theory of their adjustment and their use.

The field work includes: first, preliminary practice until a reasonable degree of facility and precision is attained by each student in doing well a piece of work such as; differential levelling, or a land survey

NOTE.—Students desiring to take Mathematics 57, 58, 59, or 60 should consult with the instructor before registering.

nvolving the ordinary measurements of lines and angles; second, a opographic survey of a tract of land for a contour map; computation of earthwork "cuts and fills"; survey for highway line; locating survey of a proposed railway line, including practice in staking out simple curves; solar observations with the engineer's transit for azimuth.

2 Rec., 1 field exercise per week. 2d S.

56. Differential Calculus. { I. Assoc. Prof. Moore. D.H. II. Assoc. Prof. Steck. D.H. III. Mr. Garabedian. D.H.

The elements of the differential calculus. The differentiation of algebraic and transcendental functions. For Engineering Freshmen. Elective for Arts and Science Freshmen.

Prerequisite—Math. 51b. Mathematics 52 (Analytic Geometry) must be taken as a parallel subject.

3 Rec. per week. 2d S.

MECHANICAL ENGINEERING.

PROF. PORTER, ASST. PROF. SEVERNS, MR. EMERSON.

52. Mechanics of Engineering. Prof. Porter. 2–45 D.H.

Principles of pure mechanics as applied to engineering structure involving composition forces, analytics and graphics. Conditions of equilibrium, center of gravity, moment of inertia, strength of materials, riveted joints. For Electrical and Mechanical Sophomores.

Mathematics 56 required as parallel course. 3 Rec. per week. 2d S.

58. Thermodynamics. Prof. Porter. 2–45 D.H.

A study of the laws of thermodynamics and the thermodynamic properties of steam and gases. Their application to steam, gasoline engines, theory of refrigeration, and injectors. Required for Electrical Engineering and Mechanical Engineering Juniors and Chemical Engineering Seniors.

Prerequisite—Mathematics 56. 3 Rec. per week. 2d S.

59. Mechanical Laboratory.

Prof. Porter, Asst. Prof. Severns, Mr. Emerson. 0–24 D.H.

Physical tests of iron, steel, concrete, timber, calibration of instruments used in testing and finding the efficiency of simple machines. For Electrical Engineering and Mechanical Engineering Juniors. Fee, $1.50.

Prerequisite—Mechanical Engineering 52.

1 Rec., 1 Lab. per week. 1st S.

60. Mechanical Laboratory.

Prof. Porter, Asst. Prof. Severns, Mr. Emerson. 0–24 D.H

Analysis of coal, oil, gas, setting of valves, testing of water meters and hydraulic meters, calibration of a wier notch. Electrical Engineering and Mechanical Engineering Juniors. Continuation of Mechanical Engineering 59. Fee, $1.50. *1 Rec., 1 Lab. per week. 2d S.*

62. Hydraulics. Asst. Prof. Severns. 2–45 D.H.

The mechanics of liquids, principle of fluid pressures, stability of structures, flow of liquids, methods and measurement of streams, and quantities of water by means of floats, wiers and meters and the fundamental principles of hydraulic machinery. For Electrical Engineering and Mechanical Engineering Juniors.

Prerequisite—Mechanical Engineering 69. 3 Rec. per week. 2d S.

63. Materials of Construction. Asst. Prof. Severns. 2–45 D.H.

A study of the manufacture, properties and uses of iron, steel, brass bronze, wood, brick, cement and concrete. For Electrical Engineering and Mechanical Engineering Juniors and Chemical Engineering Seniors

Prerequisite—Mechanical Engineering 52. 3 Rec. per week. 1st S.

64. Machine Design. Asst. Prof. Severns. 2–48 D.H

Study of the elements of machines, design of fastening joints, gearing belting, lubrication, machine frames and attachments. The work in the drafting room consists of the actual design of cranes, punches and machine parts. For Electrical Engineering and Mechanical Engineering Juniors.

Prerequisite—Mechanical Engineering 69.

2 Rec., 2 Lab. per week. 2d S

65. Mechanical Engineering Laboratory.

Prof. Porter, Asst. Prof. Severns, Mr. Emerson. 0–24 D.H

Tests of gasoline and steam engine pumps, air compressors, boilers and a study of their operation. Continuation of Mechanical Engineering 60 For Electrical Engineering and Mechanical Engineering Seniors. Fee $1.50. *1 Rec., 1 Lab. per week. 1st S*

66. Mechanical Laboratory.

Prof. Porter, Asst. Prof. Severns, Mr. Emerson. 0–24 D.H

A continuation of Mechanical Engineering 65. For Mechanical Engineering Seniors. Fee, $2.00. *1 Rec., 2 Lab. per week. 2d S*

68. Advanced Design. Prof. Porter. 2–40 D.H

Design of steam boiler plants and the lay-out of piping for the said plant. Selection of types of boilers and equipment for power plants The lay-out and equipment for factories. For Mechanical Engineering Seniors.

Prerequisite—Mechanical Engineering 73. 3 Lab. per week. 2d S

69. Mechanics of Engineering. Prof. Porter. 2–45 D.H.

Principles of mechanics as applied to design of beams, columns, plain and reinforced concrete construction, principles of dynamics as applied to the design of fly wheels and moving parts of machines. For Electrical Engineering and Mechanical Engineering Juniors.

Prerequisite—Mechanical Engineering 52. *5 Rec. per week. 1st S.*

72. Manual Training. Prof. Porter. 2–45 D.H.

A study of the purpose of manual training work, of the proper methods of teaching, and of the equipment of manual training schools. For Mechanic Arts Seniors. *1 Rec. 2d S.*

73. Power Plant Engineering. Prof. Porter. 2–45 D.H.

A study of fuels, theory of combustion, various types of boiler engines and prime movers, full equipment of power plants, and the design of chimneys and cooling towers for Electrical Engineering and Mechanical Engineering Seniors.

Prerequisite—Mechanical Engineering 58. *4 Rec. per week. 1st S.*

74. Kinematics of Machinery. Mr. Emerson. 2–45 D.H.

Study of mechanisms, location of virtual centers, construction of velocity and acceleration diagrams, design of gears and linkages. For Electrical Engineering and Mechanical Engineering Sophomores.

Prerequisite—Drawing 57. *2 Lab. per week. 2d S.*

77. Valve Gears and Boiler Design. Asst. Prof. Severns. 2–40 D.H.

A study of various types of valves used in steam engines, the uses of Bilgram and Zeuner valve diagrams, the design of a Corliss valve gear, and the complete design of return tubular boilers. Elective for Electrical Engineering and Mechanical Engineering Juniors.

Prerequisite—Mechanical Engineering 52. *2 Lab. per week. 1st S.*

77a. Problems. Prof. Porter. 2–40 D.H.

Problems in mechanical engineering dealing with practical work.

1 Rec. per week. 1st S.

78. Industrial Engineering. Prof. Porter. 2–45 D.H.

A study of factory conditions, safety devices, sanitation, lighting, ventilation, fire prevention, methods of keeping costs and methods of supervision of factories. For Mechanical Engineering Seniors.

Prerequisite—Mechanical Engineering 73. *3 Rec. per week. 2d S.*

79. Heating and Ventilation. Prof. Porter. 2–45 D.H.

Computation of air requirements, heat losses, design of heating and ventilation systems, location of apparatus, lay-out of piping, low pressure district heating systems. For Mechanical Engineering Seniors.

Prerequisite—Mechanical Engineering 64.

1 Rec., 2 Lab. per week. 1st S.

METEOROLOGY.

PROF. PETTEE.

1. Meteorology. Prof. Pettee. 206 T.H.

Recitations and lectures on wind systems, precipitation, humidity, laws of storms and tornadoes and methods of prediction of atmospheric changes. For Agricultural Seniors. Elective for Arts and Science students.

Prerequisite—Elementary Physics. *2 Rec. per week. 1st S.*

MILITARY ART.

CAPT. HUNT.

Unless excused by proper authority, all male students are required to complete two years' satisfactory work in military art.

Course of Training for Infantry Units of the Senior Division.

1. Military Art. Capt. Hunt. 105 Armory.

Three hours a week.

(*a*) Practical. Weight 10.

Physical drill (Manual of Physical Training—Koehler); Infantry drill (U. S. Infantry Drill Regulations), to include the School of the Soldier, Squad and Company, close and extended order. Preliminary instruction sighting position and aiming drills, gallery practice, nomenclature and care of rifle and equipment.

(*b*) Theoretical. Weight 4.

Theory of target practice, individual and collective (use of landscape targets made up by U. S. Military Disciplinary Barracks, Fort Leavenworth, Kans.); military organization (Tables of Organization); map reading; service of security; personal hygiene.

2 credit hours. 1 Rec., Balance Drill. 1st S.

2. Military Art. Capt. Hunt. 105 Armory.

Three hours a week.

(*a*) Practical. Weight 10.

Physical drill (Manual of Physical Training—Koehler); Infantry drill (U. S. Infantry Drill Regulations), to include School of Battalion, special attention devoted to fire direction and control; ceremonies; manuals (Part V, Infantry Drill Regulations); bayonet combat; intrenchments (584–595, Infantry Drill Regulations); first-aid instruction; range and gallery practice.

(*b*) Theoretical. Weight 4.

Lectures, general military policy as shown by military history of United States and military obligations of citizenship; service of information; combat (to be illustrated by small tactical exercises); United States Infantry Drill Regulations, to include School of Company; camp sanitation for small commands.

2 credit hours. 1 Rec., Balance Drill. 2d S.

3. **Military Art.** Capt. Hunt. 105 Armory.

Three hours a week.

(*a*) Practical. Weight 10.

The same as course 2 (*a*). Combat firing, if practicable, but collective firing should be attempted in indoor ranges by devices now in vogue at United States Disciplinary Barracks.

(*b*) Theoretical. Weight 4.

United States Infantry Drill Regulations, to include School of Battalion and Combat (350–622); Small-Arms Firing Regulations; lectures as in (*b*) course 2; map reading; camp sanitation and camping expedients.

2 credit hours. 1 Rec., Balance Drill. 1st S.

4. **Military Art.** Capt. Hunt. 105 Armory.

Three hours a week.

(*a*) Practical. Weight 10.

The same as course 2 (*a*); signaling; semaphore and flag; first-aid. Work with sand table by constructing to scale intrenchments, field works, obstacles, bridges, etc. Comparison of ground forms (constructed to scale) with terrain as represented on map; range practice.

(*b*) Theoretical. Weight 4.

Lectures, military history (recent); service of information and security (illustrated by small tactical problems in patrolling, advance guards, rear guards, flank guards, trench and mine warfare, orders, messages, and camping expedients); marches and camps (Field Service Regulations and Infantry Drill Regulations).

2 credit hours. 1 Rec., Balance Drill. 2d S.

5. **Military Art.** Capt. Hunt. 105 Armory.

Five hours a week.

(*a*) Practical. Weight 13.

Duties consistent with rank as cadet officers or non-commissioned officers in connection with the practical work and exercises laid down for the unit or units. Military sketching.

(*b*) Theoretical. Weight 11.

Minor tactics; field orders (studies in minor tactics, United States School of the Line); map maneuvers. Weight 8.

Company administration, general principles (papers and returns). Weight 1.

Military history. Weight 2.

3 credit hours. 2 Rec., Balance Drill. 1st S.

6. Military Art. Capt. Hunt. 105 Armory.

Five hours a week.

(*a*) Practical. Weight 13.

Same as (*a*) course 5. Military sketching.

(*b*) Theoretical. Weight 11.

Minor tactics (continued); map maneuvers. Weight 8.

Elements of international law. Weight 2.

Property accountability; method of obtaining supplies and equipment (Army Regulations). Weight 1.

3 credit hours, 2 Rec., Balance Drill. 2d S.

7. Military Art. Capt. Hunt. 105 Armory.

Five hours a week.

(*a*) Practical. Weight 13.

Duties consistent with rank as cadet officers or noncommissioned officers in connection with the practical work and exercises scheduled for the unit or units. Military sketching.

(*b*) Theoretical. Weight 11.

Tactical problems, small forces, all arms combined; map maneuvers; court-martial proceedings (Manual for Courts-martial).

International relations of America from discovery to present day; gradual growth of principles of international law embodied in American diplomacy, legislation, and treaties.

Lectures: Psychology of war and kindred subjects.

General principles of strategy only, planned to show the intimate relationship between the statesman and the soldier (not to exceed 5 lectures).

3 credit hours, 2 Rec., Balance Drill. 1st S

8. Military Art. Capt. Hunt. 105 Armory

Five hours a week.

(*a*) Practical. Weight 13.

Same as course 7 (*a*).

(*b*) Theoretical. Weight 11.

Tactical problems (continued); map maneuvers. Rifle in war.

Lectures on military history and policy.

3 credit hours, 2 Rec., Balance Drill. 2d S

It is presumed that each member of the Reserve Officers' Training Corps during his academic course has taken one course or equivalent credit in either French, or German, or Spanish.

Special courses can no doubt be arranged at each institution so that specialists will be developed for duties other than those prescribed for reserve officers of the mobile arms.

MINERALOGY.

PROF. JAMES.

4. **Mineralogy.** Prof. James. 204 C.H.

A short subject in blowpipe analysis, followed by laboratory practice in the determination and study of minerals, with special reference to their economic value. For Chemical Sophomores. Elective for Agricultural and Arts and Science Juniors.

Prerequisites—Chemistry 51 and 52. *2 Lab. per week. 2d S.*

PHYSICAL CULTURE.

MISS ROLLINS.

Unless excused by proper authority, all women students are required to complete three years' work in physical culture. One hour credit is given for each subject completed.

1. **Physical Culture.** Miss Rollins. 303 T.H.

For Freshmen. Corrective gymnastics. *Two exercises per week. 1st S.*

2. **Physical Culture.** Miss Rollins. 303 T. H.

For Freshmen. Gymnasium practice and aesthetic games. Folk dancing. *Two exercises per week. 2d S.*

3. **Physical Culture.** Miss Rollins. 303 T.H.

For Sophomores. Practical gymnastics.

Two exercises per week. 1st S.

4. **Physical Culture.** Miss Rollins. 303 T.H.

Continuation of Physical Culture 3, folk dancing and aesthetic games.

Two exercises per week. 2d S.

5. **Physical Culture.** Miss Rollins. 303 T.H.

For Juniors. Advanced gymnastics, aesthetic, folk and interpretative dancing. *Two exercises per week. 1st S.*

6. **Physical Culture.** Miss Rollins. 303 T.H.

For Juniors. Continuation of Physical Culture 5.

Two exercises per week. 2d S.

7. Physical Culture. Miss Rollins. 303 T.H.

For Seniors. Classic dancing and continuation of Junior work.

Two exercises per week. 1st S.

8. Physical Culture. Miss Rollins. 303 T.H.

For Seniors. Continuation of Physical Culture 7.

Two exercises per week. 2d S.

PHYSICS.

PROF. SUYDAM, MR. MORAN, MR. EMERSON.

51. Mechanics and Heat. Prof. Suydam. 2–46 D.H.

Lectures, illustrated by experiments, with notebooks to be handed in at intervals and occasional written quizzes. As little mathematics is used as is consistent with the proper interpretation of the lecture experiments. For Agricultural and Mechanic Arts Sophomores. Elective for Arts and Science students.

2 Lec. per week. 1st S.

52. Magnetism and Electricity. Prof. Suydam. 2–46 D.H.

A continuation of Physics 51. *2 Lec. per week. 2d S.*

53. Physical Theory and Practice. Mr. Moran. 1–35, 1–37 D.H.

Recitations on a standard textbook, with laboratory work, supplemented by lectures.

Students electing this subject are advised to take analytic geometry and calculus; the lack of them will prove a hindrance. For Mechanical and Electrical Sophomores; elective for Arts and Science students.

2 Lec., 2 Rec., 2 Lab. per week. 1st S.

54. Physical Theory and Practice. Mr. Moran. 1–35, 1–37 D.H.

A continuation of Physics 53.

Prerequisite—Physics 53. 2 Lec., 2 Rec., 2 Lab. per week. 2d S.

55. Mathematical Physics and Practice.

Prof. Suydam. 1–35, 2–46 D.H.

Similar to Physics 53, but more mathematical. For Chemical Juniors. Elective for Arts and Science students.

Prerequisites—Mathematics 52, 55 and 56.

2 Lec., 2 Rec., 2 Lab. per week. 1st S.

NOTE.—The following fees or deposits are required at the beginning of a year or part of a year: for notes, not returnable, Physics 51, 52—75c.; Physics 59—40c.; for notes and damage, balance returnable at end of year, Physics 57, 58, 59, 82—$1.00; Physics 53, 54, 55, 56—$2.00.

NOTE.—Students desiring to be recommended as High School Physics teachers must pass with grade of 80 in Physics 51, 52, 55, 56, or with grade of 85 in Physics 51, 52, 53, 54.

56. Mathematical Physics and Practice.
Prof. Suydam. 1–35, 2–46 D.H.

A continuation of Physics 55.
Prerequisite—Physics 55. *2 Lec., 2 Rec., 2 Lab. per week.* *2d S.*

57. Household Physics. Prof. Suydam. 1–35, 2–46 D.H.

A general treatment of the physical principles underlying the operation of household appliances. For Home Economics Sophomores entering without high school physics. *2 Lec., 1 Lab. per week.* *1st S.*

58. Elementary Physics and Practice. Mr. Moran. 1–35, 2–46 D.H.

A review of physics for students who do not desire mathematical work, but need a study of principles, with laboratory applications. Mathematics 51 and Physics 51 and 52 must precede or accompany this. For Mechanic Arts Sophomores. Elective for Arts and Science students. *2 Rec., 1 Lab. per week.* *2d S.*

59. Elementary Optics and Photographic Instruments.
Mr. Moran. 1–35, 2–46 D.H.

Designed for students who wish to use optical and photographic apparatus intelligently. Lectures on fundamental principles of light, images, color and photometry, and on practical visual, projection and photographic lenses and other apparatus; with experimental illustrations. (Not devoted to photographic chemistry, developers, etc.) Stencil notes will be used. Elective for all students, except Freshmen and Two Year students in the first year.
2 Lab., 2 Lec. per week. *1st S.*

POLITICAL SCIENCE.

PROF. SCOTT.

2. Laws of Business. Prof. Scott. 202 Lib.

Recitations supplemented by the discussion of cases. Elective for Arts and Science Sophomores, Mechanic Arts Juniors and Seniors and Agricultural Seniors. *3 Rec. per week.* *2d S.*

3. American Constitutional Law. Prof. Scott. 202 Lib.

Recitations, supplemented by a study of the decisions of the United States Supreme Court. Special attention is given to the connection between American constitutions and American political history. Elective for Arts and Science and Mechanic Arts Juniors and Seniors and Agricultural Seniors. *3 Rec. per week.* *1st S.*

POULTRY HUSBANDRY.

PROF. MITCHELL.

Poultry 2. Farm Poultry. Prof. Mitchell. 202 M.I

Subject treats general considerations, houses and appliances, typ of poultry, fattening and marketing, caponizing, principles of breedin feeding, incubation and brooding, sanitation, diseases and parasites, ar poultry management. For Agricultural Sophomores.

2 Lec., 1 Lab. per week. 2d

Poultry 3. Poultry Judging. Prof. Mitchell. 202 M.I

Subject includes a study of the origin and history of breeds and vari ties. A discussion of poultry organizations and poultry shows. Ele tive. *2 Lec., 1 Lab. per week. 1st*

Poultry 6. Home Poultry. Prof. Mitchell. 202 M.I

A study of poultry with reference to the home. A discussion of facto bearing on production of eggs and table birds. A study of the grad and quality of eggs and poultry. Preparation of fowl for roasting, fryin etc. Elective for Home Economics and Arts and Science Juniors ar Seniors. *2 Lec. per week. 2d*

Poultry 61. Prof. Mitchell. 202 M.I

In this subject are discussed the location of a poultry farm, poult buildings, poultry house construction, types and breeds of poultr caponizing, killing and dressing, and fattening. Elective for Agric tural Seniors. *2 Lec., 1 Lab. per week. 1st*

Poultry 62. Prof. Mitchell. 202 M.I

This covers the subjects of poultry foods and feeding, incubatic brooding, markets, poultry diseases, and poultry farm problems. Ele tive for Agricultural Seniors. *2 Lec., 1 Lab. per week. 2d*

PSYCHOLOGY.

PROF. SIMMERS.

52. Introduction to Psychology. Prof. Simmers. 211 T.

A rapid survey of the physiological bases of behavior, is followed by more detailed study of the fundamental facts of mind or human behavi chiefly as exhibited by the normal individual working under normal co ditions. The principles of the science are related as closely as possil to the concrete experiences of the student.

Required of Manual Arts Sophomores and Agricultural Junio Elective for all other students. Must be taken by those who wish elect other subjects in psychology. Lectures, assigned readings and d cussion. Sophomore subject. *3 Rec. per week. 2d*

53. Psychology of the Adolescent. Prof. Simmers. 211 T.H.

A study is made of the growth and development of the physical, psychic, intellectual, moral, social and religious nature of the adolescent boy and girl. The aim is to develop in the students a clearer insight into the nature of youth, particularly those of high school age, so they can be dealt with in a more sympathetic and helpful manner. Required of Manual Arts and Agricultural Seniors. Elective for all other students. Lectures, assigned readings and discussion. Junior subject.

Prerequisite—Psychology 52. *3 Rec. per week. 1st S.*

SHOP WORK.

PROF. PORTER, MR. BATCHELDER AND MR. MCBRIDE.

51. Wood Work. Mr. Batchelder. Second Floor of Shop.

Instruction in the use and care of wood working tools, and machinery in the wood shop, exercises in making joints of various types, and pattern making for Engineering Mechanic Arts Freshmen. Elective for Arts and Science Freshmen. Fee, $1.50. *2 Lab. per week. 1st S.*

51a. Wood Work. Mr. Batchelder. Second Floor of Shop.

Instruction in the care and use of wood working tools and machinery; making of simple joints and bench exercises. For Chemical Freshmen. Fee, $1.00. *1 Lab. per week. 1st S.*

52. Wood Work. Mr. Batchelder. Second Floor of Shop.

Continuation of Shop 51. Is arranged to teach students taking Mechanic Arts Course, cabinet making, and its application to manual training. For Mechanic Arts Freshmen. Fee, $1.50.

Prerequisite—Shop 51. *2 Lab. per week. 2d S.*

54. Wood Work. Mr. Batchelder. Second Floor of Shop.

Instruction in the care and use of tools in the carpenter shop, making of simple joints and frames, saw filing and the making of handles, single trees and other implements of wood used upon the farm. For Agricultural Juniors. Fee, $1.50. *2 Lab. per week. 2d S.*

55. Forging. Mr. McBride. First Floor of Shop.

This is a study of the forging of iron and steel and is designed to teach the operations of drawing, upsetting, welding, twisting, splitting and punching. A study is made of the construction, care and management of the forge and instruction given in tempering, case hardening and annealing. For Agricultural Juniors. Fee, $1.00.

1 Lab. per week. 1st S.

57. Forging. Mr. McBride. First Floor of Shop

This is a study of the forging of iron and steel and is designed t teach the operation of drawing, upsetting, welding, twisting, splitting and punching. A study is made of the construction, care and manage ment of the forge and instruction given in tempering, case hardenin and annealing. For Electrical and Mechanical Sophomores. Fee, $1.5

2 Lab. per week. 1st S

59. Wood Work. Mr. Batchelder. Second Floor of Shop

The use and care of wood turning tools and machinery, exercises upo wood turning lathes and cabinet making. For Mechanic Arts Sopho mores. Fee, $2.00.

Prerequisite—Shop 52. *3 Lab. per week. 1st S*

60. Wood Work. Mr. Batchelder. Second Floor of Shop

Continuation of Shop 59. More complicated cabinet work an finishing same. For Mechanic Arts Sophomores. Fee, $2.00.

3 Lab. per week. 2d S

62. Machine Work. Mr. McBride. First Floor of Shop

Exercises in bench work, chipping, filing and scraping and layin out of work from drawings; a study of cutting edges and tool adjust ments best suited for different metals together with a study of cuttin speeds and feeds. Practice in operating the principal machine tool such as the shaper, lathe, drill press, planer and milling machine. Fo Electrical and Mechanical Sophomores. Fee, $1.50.

2 Lab. per week. 2d S

63. General Machine Work. Mr. McBride. First Floor of Shop

A continuation of Shop 62. For Electrical and Mechanical Junior

2 Lab. per week. 1st S

64. Manufacturing. Mr. McBride. First Floor of Sho

Construction and use of jigs and special fixtures; use of limit gauge special tools, turret and screw machinery; manufacture of some simpl machine, using special appliances. Elective for Electrical and Mechar ical Juniors. Fee, $1.50. *2 Lab. per week. 2d*

65. Wood Work. Mr. Batchelder. Second Floor of Sho

This subject is laid out to teach students exercises that are suitab for subjects in manual training in secondary schools. For Mechan Arts Juniors. Fee, $1.50. *2 Lab. per week. 1st*

66. Forge Work. Mr. McBride. First Floor of Sho

This is a study of the forging of iron and steel and is designed t teach the operation of drawing, upsetting, welding, twisting, splittin and punching. A study is made of the construction, care and ma agement of the forge and instruction given in tempering, case hardenir and annealing. For Mechanic Arts Juniors. Fee, $1.50.

3 Lab. per week. 2d

67. Manual Training Practice. Mr. Batchelder. Second Floor of Shop.

Exercises in teaching under direction of wood shop instructor. For Mechanics Arts Seniors. *2 Lab. per week. 1st S.*

68. Machine Work. Mr. McBride. First Floor of Shop.

Exercises in bench work, chipping, filing and scraping and laying out of work from drawings; a study of cutting edges and tool adjustments best suited for different metals together with a study of cutting speeds and feeds. Practice in operating the principal machine tools, such as the shaper, lathe, drill press, planer and milling machine. For Chemical Juniors. Fee, $1.50. *2 Lab. per week. 2d S.*

69. Advanced Shop Work. Mr. Batchelder. Second Floor of Shop.

Advanced pattern making and foundry practice for Mechanical Seniors. Fee, $1.50. *2 Lab. per week. 1st S.*

71. Machine Work. Mr. McBride. First Floor of Shop.

Machine work arranged to meet the needs of students taking the Mechanic Arts Course for Teachers. For Mechanic Arts Seniors. Fee, $2.00. *3 Lab. per week. 1st S.*

72. Machine Work. Mr. McBride. First Floor of Shop.

A continuation of Shop 71. Fee, $2.00. *3 Lab. per week. 2d S.*

SOCIOLOGY.

PROF. GROVES.

51. Primitive Man and Social Origins. Prof. Groves. 201 Lib.

An elementary study of life of primitive man, the beginnings of human society and the factors that condition social evolution. The subject aims to introduce the student to a field of investigation of special value to the student of the social sciences. Special attention is given to the study of primitive social control. Ethnological readings are required.

The subject includes a discussion of the following topics: Geographical basis of human society, origin and antiquity of primitive man, races, race crossing, prehistoric culture periods, primitive life conditions including food, housing, inventions, slavery, art, dress, marriage, family forms and customs, totemism, tabu, magic, medicine men, ceremonies, secret societies, clan and tribal organization.

Special attention will be given to the theories of human association. Sophomore subject. Lectures and recitations. *3 Rec. per week. 1st S.*

52. Social Pathology and Modern Philanthropy.

Prof. Groves. 201 Lib

This subject in modern social problems covers the following ground

A. Study of the nature, origin and proper treatment of dependent defective and delinquent classes, including an introduction to the theo ries of criminal anthropology.

B. Study of contemporary social problems and movements for socia betterment as reported in *The Survey.*

C. Thesis work on the part of the student based upon first-hand stud of some concrete social problem.

Junior subject. Students are advised to complete Sociology 51 befor electing this subject. Lectures and recitations.

3 Rec. per week. 2d S

***53. Mental Defectives.** Prof. Groves. 201 Lib

A sociological study of mental defectiveness with special attention t the problem of social prophylaxis. Designed for students who pla to engage in social or educational work of an administrative or inst tutional character or who plan to do graduate work in the field o psychology or sociology.

The subject covers the following ground:

A. The study of amentia, including a discussion of the number, caus tion, pathology, classification, characteristics, problem of diagnosis an prognosis and the treatment of aments.

B. The study of the constitution and function of the psychologic clinic, method of classifying clinic cases, the Binet measuring scale, th sociological relations of the clinic.

C. Individual study by the student of typical cases of mental defe tiveness by the case method.

D. An introduction to the literature of amentia.

Junior subject. Lectures and recitations.

Prerequisites—Psychology 52 and Sociology 51.

3 Rec. per week. 1st

54. Rural and Community Sociology. Prof Groves. 201 Li

A study of the social significance, conditions and resources of Amer can country life with the purpose of developing community leadershi The subject includes a discussion of the following:

A. Rural ethnology and sociology. Land basis of society, origin primitive agriculture, animal and plant life as factors in human progres modern agriculture and population, migration, immigration and ci drift.

B. Rural social psychology. Imitation and city influence, sugges bility, conflict, discussion, public opinion and community pride.

*Sociology 53 and 55 are given in alternate years. Sociology 55 is offered 1917–1918.

C. Rural social pathology. Dependents, defectives and delinquents in their relation to the country community, problem of rural police protection, moral problems of the rural community.

D. Rural progress. Survey making, communication, community advertising, associations and clubs, rural education, wider use of rural school houses, rural school gardens, community competition, fairs, recreation, the rural church and welfare work.

Senior subject. Lectures and recitations. *3 Rec. per week. 2d S.*

***55. Social Psychology.** Prof. Groves. 201 Lib.

A study of the development and the characteristics of the social mind of man.

The subject covers the following ground:

A. The study in detail of the character and operation of the instincts, sentiments and emotions of man of primary importance for his life in society.

B. The study of the operation of the modern social mind, including a discussion of suggestibility, the crowd, mob mind, fashion, conventionality, custom-imitation, social conflict, discussion, public opinion and problems of social control.

Junior subject. Lectures and recitations.

Prerequisite—Psychology 52. *3 Rec. per week. 1st S.*

†56. An Introduction to General Sociology. Prof. Groves. 201 Lib.

An advanced subject in the principles of sociology which aims to introduce the student to a systematic sociological interpretation of human association. It includes a study of the history of sociological thought, discussions of sociological principles and recent sociological literature. This subject is the most advanced offered by the department and is especially provided for those who are specializing in the social sciences. Thesis work is required.

Senior subject. Lectures and recitations.

Prerequisite—Any two subjects in sociology. *3 Rec. per week. 2d S.*

†58. Social Ethics. Prof. Groves. 201 Lib.

This subject in social ethics covers the following ground:

A. Origin and development of moral conceptions in savage society.

B. The study of representative altruistic thought of ethical significance.

C. The investigation by the seminar method of some ethical problem of importance in modern social life.

Senior subject. Lectures and recitations.

Prerequisite—Any two subjects in sociology. *3 Rec. per week. 2d S.*

* Sociology 53 and 55 are given in alternate years. Sociology 55 is offered in 1917–1918.

† Sociology 56 and 58 are given in alternate years. Sociology 56 is offered in 1917–1918.

SPANISH.

PROF. WHORISKEY, MR. CULVER, MR. RAYMOND.

1. Elementary Spanish. Mr. Culver. 102 T.H.

Elements of Spanish grammar. Reading of simple stories; conversation and dictation. Elective for Arts and Science students.

3 Rec. per week. 1st S.

2. A Continuation of Spanish 1. Mr. Culver, Mr. Raymond. 102 T.H.

Prerequisite—Spanish 1. *3 Rec. per week. 2d S.*

3. Spanish Prose. Mr. Culver. 102 T.H.

Reading and translation, conversation, composition.

Prerequisite—Spanish 2. *3 Rec. per week. 1st S.*

4. A Continuation of Spanish 3. Mr. Culver. 102 T.H.

Prerequisite—Spanish 3. *3 Rec. per week. 2d S.*

ZOÖLOGY.

PROF. JACKSON, MR. BATCHELDER, MR. BEAN.

The subjects in zoölogy are arranged in sequence as follows: Arts and Science students desiring a general scientific knowledge of the subject should elect from group A, B and D with optional elections in C. Students who do not intend to specialize in zoölogy may elect from group A or B. Those students intending to teach the subject of zoölogy or who are contemplating entering the medical profession should consult the head of the department as to the sequence of subjects. However, any subject offered may be taken by students who have completed the required prerequisites.

Group A. Systematic Zoölogy.

51. General Zoölogy.

Prof. Jackson, Mr. Batchelder, Mr. Bean. 212 T.H.

A detailed study of the fundamental principles of life; the nature and physiology of protoplasm; the structure of the cell and the processes of cell division. The structure and physiology of the tissues will be discussed and their occurrence in the different phyla of the animal kingdom. There will then follow a discussion of the different organs and systems of the body, their function and modification in the different types of animals. For Agricultural and Home Economics Freshmen. Elective for Arts and Science and Mechanic Arts Freshmen.

2 Lec., 1 Lab. per week. 1st S.

52. General Zoölogy. Prof. Jackson, Mr. Batchelder. 212 T.H.

The structure, habits, physiology and life history of the different types of animals will be discussed. The economic aspect will be emphasized so far as possible and their importance and relation to man. The laboratory work will consist of the study and dissection of type forms. For Agricultural and Home Economics Freshmen. Elective for Arts and Science and Mechanic Arts students.

Prerequisite—Zoölogy 51. *2 Lec., 1 Lab. per week. 2d S.*

53. Faunal Zoölogy (Invertebrate). Prof. Jackson. 212 T.H.

A study of the habits, life history and identification of local invertebrate animals exclusive of the insects. The study is entirely systematic and is primarily for students intending to teach zoölogy.

Prerequisites—Zoölogy 51 and 52. 1 Report, 2 Lab. per week. 1st S.

54. Faunal Zoölogy (Vertebrate). Prof. Jackson. 212 T.H.

A study of the habits, life history and identification of local vertebrate animals exclusive of the birds. The student will be expected to become familiar with the majority of our local vertebrate animals. The work is primarily for students intending to teach zoölogy.

Prerequisites—Zoölogy 51 and 52. 1 Report, 2 Lab. per week. 2d S.

55. Systematic Entomology. Prof. Jackson, Mr. Batchelder. 212 T.H.

A laboratory subject consisting of the collection and identification of insects without regard to their economic importance. This is primarily for students of entomology. It is suggested that students electing this subject collect insects during the summer.

Prerequisites—Zoölogy 51 and 52. 1 Report, 2 Lab. per week. 1st S.

56. Ornithology Prof. Jackson. 212 T.H.

A study of the classification, identification and economic importance of the birds. The object of the subject is to enable students to identify birds at sight and to become familiar with their economic importance.

Prerequisites—Zoölogy 51 and 52. 1 Lec., 2 field trips per week. 2d S.

Group B. Physiology, Hygiene and Sanitation.

58. Human Anatomy and Physiology.

Prof. Jackson, Mr. Bean. 212 T.H.

A detailed study of the structure, physiology and histology of the human body. The various physiological processes of the body will be discussed, particularly in regard to their bearing on general hygiene and sanitation. For Home Economics Freshmen, elective for Arts and Science Freshmen and Sophomores. Written reports and library assignments required.

Prerequisite—Zoölogy 51. *2 Lec., 1 Lab. per week. 2d S.*

59. Hygiene and Sanitation. Prof. Jackson, Mr. Bean. 212 T.H.

A study of the fundamental principles of hygiene and sanitation. The nature of disease and method of maintaining the coördination of the body will be discussed, and practical methods of improving the efficiency of a human machine. For Home Economics students. Elective for Agricultural and Arts and Science Sophomores, Juniors and Seniors.

Prerequisite—Zoölogy 51. *2 Lec., 1 Lab. per week. 1st S.*

60. Advanced Sanitation.

Prof. Jackson, Mr. Bean, Mr. Batchelder. 212 T.H.

A continuation of Zoölogy 59, dealing with various phases of industrial and home sanitation. The nature of wound infection, antiseptics and disinfectants, the ventilation of buildings, shops, etc., water supplies and other topics of a practical nature, will be discussed. Frequent written reports.

Prerequisites—Zoölogy 51 and 59. *2 Lec., 1 Lab. per week. 2d S.*

61. Embryology. Prof. Jackson. 201 T.H.

A detailed study of vertebrate embryo, its method of development and the relation of the embryo to the parent. The laboratory work will be primarily with the frog and chick embryo. The lectures will include human embryology. Zoölogy 67, Histology, may be taken parallel with Embryology.

Prerequisites—Zoölogy 51, 52, 57 and 67.

1 Lec., 2 Lab. per week. 1st S.

62. Advanced Neurology. Prof. Jackson, Mr. Bean. 201 T.H.

A study of the structure and physiology of the human nervous system. The laboratory work will consist of a study of the different types of neurons, the nature of nervous impulses and a detailed study of the nerve tract in the brain and spinal column. The subject is primarily adapted for students of psychology.

Prerequisites—Zoölogy 51 and 57. *1 Lec., 2 Lab. per week. 2d S.*

Group C. Philosophical Zoölogy.

64. Evolution and Genetics. Prof. Jackson. 212 T.H.

Lectures dealing with the various problems of evolution, heredity and eugenics. A detailed study of the mechanical basis of heredity and variation with the various theories of evolution, the factors of evolution, inheritance of human characteristics, heredity and disease and other practical problems will be discussed. For Home Economics Juniors. Elective for Agricultural and Arts and Science Juniors and Seniors. Written reports and reviews required.

Prerequisite—Zoölogy 51. *3 Lec. per week. 2d S.*

Group D. Anatomical Zoölogy.

65. Comparative Anatomy of the Invertebrates.

Mr. Batchelder. 203 T.H.

A detailed study of the structure of different types of invertebrate animals exclusive of insects. The subject is primarily for students intending to teach zoölogy.

Prerequisites—Zoölogy 51 and 52. 1 Report, 2 Lab. per week. 1st S.

66. Comparative Anatomy of the Vertebrates.

Mr. Batchelder. 203 T.H.

A detailed study of the structure of different types of vertebrate animals. Primarily for students intending to teach zoölogy.

Prerequisites—Zoölogy 51 and 52. 1 Report, 2 Lab. per week. 1st S.

67. Histology. Prof. Jackson. 203 T.H.

A detailed study of the structure of the tissues of vertebrate animals, cell specialization and the manner in which tissues are combined into organs. The subject is primarily for students intending to teach zoölogy and a great deal of attention will be paid to the technique of histology.

Prerequisites—Zoölogy 51, 52 and 57.

1 Report, 2 Lab. per week. 1st S.

68. Insect Anatomy. Mr. Batchelder. 203 T.H.

A study of the anatomy of different types of insects. Especially adapted for students in entomology.

Prerequisites—Zoölogy 51, 52 and 55. 1 Report, 2 Lab. per week. 2d S.

Group E. Advanced Zoölogy.

69. Advanced Zoölogy. Prof. Jackson. 202 T.H.

Arranged to suit the need of those who wish to specialize in zoölogy. This subject may not be elected except by students who have completed at least 18 hours in zoölogy or entomology with an average mark of at least 80 and then only on the presentation of the detailed outline of the problems they wish to study. The subject is primarily for graduate students. Open only to students by special permission.

Credit and hours to be arranged. 1st S.

70. Advanced Zoölogy. Prof. Jackson. 202 T.H.

A continuation of Zoölogy 69. The subject can only be elected under the above restrictions. Open only to students by special permission.

Credit and hours to be arranged. 2d S.

71. Vocational Zoölogy. Prof. Jackson. 202 T.H.

A discussion of the principles of teaching zoölogy and the application of zoölogy to other lines of work. Practical work will be under the

direct supervision of the head of the department. Lectures will dea with the method of presenting the subject with the adaptation of th subject to meet the special requirements of high schools and colleges methods of grading laboratory work and examination papers and genera laboratory and class administration. The application of zoölogy t various government positions will also be discussed. Only student who have shown special proficiency in zoölogy may elect this subject Open only to students by special permission.

1 Report, 2 Lab. per week. 1st S

72. Vocational Zoölogy. Prof. Jackson. 202 T.H

A continuation of Zoölogy 71. The subject can only be elected unde the above restrictions. Open only to students by special permission.

1 Report, 2 Lab. per week. 2d S

THE TWO-YEAR COURSE IN AGRICULTURE.

This course was established by the state legislature in 1895, and provides an opportunity to secure a training for their life work for those students who do not have the time, money or preparation to take a four-year college course.

The course is especially arranged, and suited for the young, bright boys of the farm, who expect to make a business of some line of agricultural or horticultural work. Although it is open to students who have had no previous training on the farm, the entrance of such is not encouraged because of their lack of practical experience. By independent work and close application, however, inexperienced students sometimes pass the course with credit.

The year's work closes the middle of May, so as to enable the students to get home for the spring work on the farm or to accept other positions for the summer. This short school year also permits four months' time for those students who are dependent upon their own resources to earn money for the following year.

The courses of study and the classes of the two-year course are separate and distinct from those of the four-year courses. The work of the first year is largely preparatory, being a study of the sciences underlying agriculture, together with some elementary agricultural and horticultural work. The second year contains optional studies so that it is possible for students to specialize in animal husbandry, poultry, dairying, horticulture or forestry. Ten hours per week on the average are spent in practical work on the farm, in the barn, greenhouses, shops or forest.

Admission.—The course is open to those having a fair knowledge of reading, spelling, writing, arithmetic, English grammar, geography and history of the United States. Applicants under eighteen years of age, who do not present high school or other satisfactory certificates to show their

proficiency in these subjects, may be given entrance examinations on Tuesday afternoon and Wednesday morning of the opening week of college. Applicants who are over eighteen years of age will be admitted without examination.

Expenses.—The expenses of the course will vary with the taste and frugality of the students and the kind of accommodations which they secure. The total average expense for the year, if the student holds a scholarship, is not far from $300. Many students by working for their board or room rent, or by doing various kinds of work about the college or village, are able to go through the year with a cash outlay not exceeding $150. However, as a rule, such students are either men of exceptional physical alertness, or those who are quick to seize opportunity.

Opening.—The course for the year will open Wednesday, September 19, 1917, and close Wednesday, May 15, 1918. A Christmas vacation of two weeks, and a spring vacation will be given.

Graduation.—No degree is given at the end of the course, but a certificate of graduation is issued upon its completion or the completion of its equivalent.

Students graduating from the two-year course must present to the dean of the agricultural division on or before the second Tuesday preceding their graduation satisfactory evidence of having had practical experience in farm work either through having lived on a farm for at least two years subsequent to the age of 12 or through having worked on a farm for at least four months subsequent to the age of 15

Students graduating from this course in 1918 must have at least 74 credit hours.

TWO-YEAR COURSE OF STUDY.

(For details, see description of studies, which follows.)

First Year.

First Semester.	Credit Hours	Second Semester.	Credit Hours
Bot. 31, Elem. of Bot.	3	*A. H. 32*, Breeds of L. Stk.	4
Dairy. 31, Milk and Milk testing	3	*Bot. 32*, Fung. Diseases of Plts.	2
Engl. 31, Gram. and El. Comp.	3	*Chem. 32*, El. Applications.	2
Hort. 33, Fruit Growing	3	*Engl. 32*, Gram. and Comp.	3
Math. 31, Prac. Arith.	2	*Ent. 32*, Econ. Ent.	3
Mil. Art, 31	2	*For. 32*, Farm For.	2
Zool. 31, Hum. Phys. and Hyg.	3	*Mil. Art, 32*	2
		Shop 32, Wood Work	2

Second Year.

First Semester.		Second Semester.	
Agr. 31, Farm Eng. and Soils	3	*Agron. 32*, Field Crops	3
A. H. 35, Vet. Anat.	3	**Agron. 34*, Manures and Fertilizers	2
A. H. 39, Poultry	3	**Agron. 36*, F. Manag. and Accounting	3
Dairy. 33, Butter Making	3	*A. H. 34*, Feeds and Feeding	3
Dairy. 35, Dairy Bact.	3	**A. H. 36*, An. Diseases	3
Draw. 31, Agr. Draw.	1	**A. H. 38*, An. Breeding	2
For. 53, Dendrology	3	**A. H. 40*, Poultry	3
Hort. 31, Veg. Gardening	3	**Dairy. 32*, Market Milk	3
Hort. 35, Greenhouse Manag.	3	**Dairy. 34*, Cheese Making	3
Mil. Art, 33	2	*Econ. 32*, El. Econ.	3
Phys. 31, El. Phys.	3	**For. 54*, For. Mensuration	3
Soc. 31, El. Social Sci.	3	**Hort. 32*, Home Decoration	3
		**Hort. 34*, Orchard Problems	2
		Mil. Art, 34	2
		Shop 34, Iron Work	1

DESCRIPTION OF STUDIES.

AGRONOMY.

PROF. TAYLOR, ASST. PROF. PRINCE, MR. YOUNG.

31. Farm Engineering and Soils. Asst. Prof. Prince. 110 M.H.

This subject will include the mapping of farms, leveling for drains, a study of farm implements and of farm buildings; textbooks and recitations upon the formation, kinds and physical properties of soils. Practical exercises are given in map making, laying out drains, comparing farm machines, rope splicing and in physical experiments with soils. For Two-Year Students, Second Year.

2 Rec. 1 Lab. per week. 1st S.

* Elective. Elect courses to make a total of at least 18 hours.

32. Field Crops. Asst. Prof. Prince. 110 M.H

Lectures and recitations on the culture, uses and value of the fiel crops grown in New England. Laboratory practice will include see testing, seed identification, corn and potato judging, hay judging an a study of the different legumes, grasses and grains.

2 Lec., 1 Lab. per week. 2d S

34. Manures and Fertilizers. Prof. Taylor. 110 M.H

Textbook and recitations upon the constituents of farm manures an chemical fertilizers, the care and application of manures, the home mixing of fertilizers and the modifications required by different soi and crops. Elective for Two-Year Students, Second Year.

2 Lec. per week. 2d S

36. Farm Management and Accounting. Mr. Young. 110 M.H

Textbook, lectures, and recitations upon different types of farmin size of farms, cropping systems, live stock problems, marketing far products, choice of a farm, and farm records and accounts. Practic work in laying out farms; keeping cost accounts on farms; analyzin and organizing the farm business. Elective for Two-Year Student Second Year. *2 Lec., 1 Lab. per week. 2d S*

ANIMAL HUSBANDRY.

PROF. ECKMAN, MR. FAWCETT.

32. Types and Breeds of Live Stock. Mr. Fawcett. 301 M.H

Similar to Animal Husbandry 51. For Two-Year Students, Fir Year. *3 Lec., 1 Lab. per week. 2d S*

34. Feeds and Feeding. Prof. Eckman. 105 M.H

Similar to Animal Husbandry 54. For Two-Year Students, Secon Year. *2 Rec., 1 Lab. per week. 2d S*

35. Veterinary Anatomy. Mr. Fawcett. 105 M.H

Similar to Animal Husbandry 55. Elective for Two-Year Student *3 Rec. per week. 1st S*

36. Animal Diseases. Prof. Eckman. 105 M.H

Similar to Animal Husbandry 56. Elective for Two-Year Student *Prerequisite—Animal Husbandry 35.* *3 Rec. per week. 2d S*

38. Animal Breeding. Mr. Fawcett. 2 M.H

A study of the principles and practices of animal breeding. Practi is given in tracing pedigrees. Elective for Two-Year Students, Secon Year. *2 Rec. per week. 2d*

BOTANY.

PROF. BUTLER, MR. DORAN.

31. Elements of Botany. Mr. Doran. 206 N.H.

Devoted to the study of how plants grow and how plants feed. For Two-Year Students, First Year. *1 Lec., 2 Lab. per week. 1st S.*

32. Fungous Diseases of Plants. Mr. Doran. 206 N.H.

The principal fungous diseases, their cure and prevention. For Two-Year Students, First Year. *1 Lec., 1 Lab. per week. 2d S.*

CHEMISTRY.

PROF. JAMES, MR. GRANT.

32. Elementary Applications. Mr. Grant. 204 C.H.

An elementary study, with special reference to the elements of plant food, composition of fertilizers, elements subject to exhaustion in soils, etc. For Two-Year Students, First Year. *2 Rec. per week. 2d S.*

DAIRYING.

PROF. FULLER, ASST. PROF. WILSON, MR. AMBROSE.

31. Milk—Milk Testing. Mr. Wilson, Mr. Ambrose. 204 N.H.

Lectures and recitations on the composition and properties of milk, the Babcock test, the lactometer, and the inspection of milk; value and methods of keeping records of dairy cows, coöperation in dairying. For Two-Year Students, First Year. *2 Lec., 1 Lab. per week. 1st S.*

33. Butter Making. Prof. Fuller. Dairy Bldg.

Comparative study of different systems of creaming and factors influencing the efficiency of the hand separator. A study of commercial starters, cream ripening, churning, marketing, and scoring of butter. Elective for Two-Year Students, Second Year.

2 Lec., 1 Lab. per week. 1st S.

34. Cheese Making. Asst. Prof. Wilson. Dairy Bldg.

Lectures and laboratory work covering the details of manufacture, curing and marketing of the more important kinds of cheese. Elective for Two-Year Students, Second Year. *2 Lec., 1 Lab. per week. 2d S.*

36. Dairy Bacteriology. Asst. Prof. Wilson. Dairy Bldg.

Methods of bacteriological analysis of milk and its products; relation of bacteria to milk and its products; and application of bacteriological principles to the dairy industry. Open to a limited number of students. Elective for Two-Year Students, Second Year.

1 Lec., 2 Lab. per week. 2d S.

37. Market Milk. Asst. Prof. Wilson. Dairy Bldg.

A study of the value of milk as a food, the production and handling of market milk and of certified milk. Commercial milk inspection. Exercises will be given in the judging of milk and cream and in the scoring of dairies. Elective for Two-Year Students, Second Year.

2 Lec., 1 Lab. per week. 1st S.

DRAWING.

PROF. HUDDLESTON, MR. ———.

31. Agricultural Drawing. Prof. Huddleston and Mr. ———. 2–39 D.H.

A brief study in the use of drafting instruments, followed by the drawing in plan of a model farm-stead with special study given to the arrangement of buildings individually and collectively. For Two-Year Students, Second Year. *1 drawing period per week. 1st S.*

ECONOMICS.

ASST. PROF. MCKAY.

32. Introduction to Agricultural Economics.

Asst. Prof. McKay. 201 Lib.

This course is designed to give the student the essentials of agricultural economics. Some attention will be given to the principles which determine the value of commodities, of land, of labor, and of capital. Money and banking institutions, with particular reference to the agricultural industry, will also be discussed. For Two-Year Students, Second Year.

1 Lec., 2 Rec. per week. 2d S.

ENGLISH.

PROF. RICHARDS, MR. RAYMOND.

31. Grammar and Elementary Composition. Mr. Raymond. 205 T.H.

For Two-Year Students, First Year. *3 Rec. per week. 1st S.*

32. Grammar and Composition. Mr. Raymond. 205 T.H.

For Two-Year Students, First Year.
Prerequisite—English 31. *3 Rec. per week. 2d S.*

ENTOMOLOGY.

PROF. O'KANE, MR. CLEVELAND.

32. Principles of Economic Entomology.
Prof. O'Kane, Mr. Cleveland. 213 T.H.

The relation of the structure and classification of insects to methods of insect control. The preparation and application of insecticides. Spray machinery and appliances. For Two-Year Students, First Year.
2 Rec., 1 Lab. per week. 2d S.

FORESTRY.

PROF. WOODWARD, MR. GAMASH.

32. Farm Forestry. Prof. Woodward, Mr. Gamash. 202 M.H.

A study of the general principles of forestry with particular reference to the care and management of woodlots; the various methods of cutting and marketing; log scaling; estimating standing timber; protection of forests; seeding and planting; reproducing forests. For Two-Year Students, First Year. *1 Rec., 1 Lab. per week. 2d S.*

HORTICULTURE.

PROF. GOURLEY, ASSOC. PROF. WOLFF, ASST. PROF. SCHERRER.

31. Vegetable Gardening. Asst. Prof. Scherrer. 202 M.H.

A study of the commercial methods of vegetable growing. Special attention is given to the home garden. Elective for Two-Year Students, Second Year. *1 Lec., 1 Rec., 1 Lab. per week. 1st S.*

32. Home Decoration. Asst. Prof. Scherrer. 202 M.H.

A study of ornamental trees, shrubs and flowers; their culture, proper arrangement and decorative value, with special reference to the home surroundings. Elective for Two-Year Students, Second Year.
1 Lec., 1 Rec., 1 Lab. per week. 2d S.

33. Fruit Growing. Assoc. Prof. Wolff. 202 M.H.

This subject embraces a study of commercial orcharding; each fruit is studied with reference to planting, cultivating, pruning, fertilizing, picking, packing, storing and marketing. For Two-Year Students, First Year. *1 Lec., 1 Rec., 1 Lab. per week. 1st S.*

34. Orchard Problems. Prof. Gourley. 202 M.H.

Dealing with the principal problems of farm orchards and commercial orchard management. This subject is designed to show the application of the principles of fruit growing to practical conditions. Elective for Two-Year Students, Second Year.

1 Lec., 1 Lab. per week. 2d S.

35. Greenhouse Management. Asst. Prof. Scherrer. 202 M.H.

Combined lecture, demonstration and laboratory work in greenhouse management. Elective for Two-Year Students, Second Year.

1 Lec., 1 Rec., 1 Lab. per week. 1st S.

MATHEMATICS.

PROF. TAYLOR, MR. YOUNG.

31. Practical Arithmetic. Mr. Young. 301 M.H

A review of arithmetic with particular reference to decimal fractions mensuration, and percentage, showing the application of these principles to the solution of practical farm problems. For Two-Year Students First Year. *2 Rec. per week. 1st S*

MILITARY ART.

CAPT. HUNT.

Unless excused by proper authority, all male students are required to complete two years' satisfactory work in military art.

Military Art, 31, 32, 33, 34. Capt. Hunt. 105 Armory

Same as Military Art 1, 2, 3, 4, page 112.

PHYSICS.

PROF. SUYDAM, MR. EMERSON.

31. Elementary Physics. Mr. Emerson. 1–35, 1–37 D.H

Practical applications of important physical principles in mechanic and heat, including a study of steam and gas engines. For Two-Yea Agricultural Students, Second Year. *2 Rec., 1 Lab. per week. 1st S*

NOTE.—A deposit of $1.00 is required at the beginning of the semeste for notes and breakage; balance returned at end of year.

POULTRY.

PROF. MITCHELL.

). Poultry. Prof. Mitchell. 202 M.H.

Covers the subjects of poultry house construction, types and breeds f poultry, feeding, killing and dressing, caponizing, and equipment. lective for Two-Year Students. *2 Rec., 1 Lab. per week. 1st S.*

). Poultry. Prof. Mitchell. 202 M.H.

Covers the subjects of incubation, brooding, care of young stock, arket poultry, poultry diseases, and poultry farm problems. Elective r Two-Year Students. *2 Rec., 1 Lab. per week. 2d S.*

SHOP WORK.

PROF. PORTER, MR. BATCHELDER, MR. MCBRIDE.

2. Wood Work. Mr. Batchelder. Second Floor of Shop.

Exercises in carpenter work, joinery and framing. Bench exercises dapted to farm uses. For Two-Year Students, First Year. Fee, $1.00. *1 Lab. per week. 2d S.*

4. Forging. Mr. McBride. First Floor of Shop.

This is a study in the forging of iron and steel and is designed to each the operation of drawing, upsetting, welding, twisting, splitting, nd punching. A study is made of the construction, care and managenent of the forge and instruction given in tempering, case hardening nd annealing. For Two-Year Students, Second Year. Fee, $1.00. *1 Lab. per week. 2d S.*

SOCIOLOGY.

PROF. GROVES, PROF. SIMMERS.

31. Elementary Social Science: Sociology and Rural Education. Prof. Groves, Prof. Simmers. 201 Lib.

An elementary study of the social conditions, forces, and institutions of the rural and small communities, especially in the New England states. The purpose of this course is the development of a social basis for leadership and the fulfillment of the obligations of an educated citizenship in the country and village communities. The second part of the semester will be given up to a study of the problems of rural education and will be conducted by the head of the department of education. For Two-Year Students, Second Year. *3 Rec. per week. 1st S.*

ZOÖLOGY.

PROF. JACKSON, MR. BATCHELDER.

31. Human Physiology and Hygiene. Mr. Batchelder. 212 T.I

A study of the structure, physiology and care of the human bod Special attention is given to the fundamental principles of zoölog the nature of parasitic and bacterial diseases and the means of preve tion. For Two-Year Students, First Year. *3 Rec. per week. 1st.*

TWO-YEAR COURSE IN ELEMENTARY INDUSTRIAL ENGINEERING.

Because of the splendid results secured in the two-year course in Agriculture, the trustees were encouraged to offer a two-year course in Elementary Engineering, which began in the fall of 1915.

By this training, any young man, of somewhat mature years, who is interested in any form of mechanics and who desires to fit himself for a profitable position in the industries, will find opportunity to increase his efficiency and thus his earning power. The course is peculiarly adapted to those who have had more or less shop experience. Any young man who is ambitious, industrious and of good moral character, may well consider the advantages here offered.

This course is offered to young men who are likely to enter the mills, factories and machine shops of the state; who will have to do with the practical problems of the telephone, gas engines, the application of water power and other industries. It is not intended to be a trade school in any sense, but the fundamental principles of mechanics, developed in a practical way, will be of direct benefit to the students who take these courses. The endeavor is to provide an opportunity for wage earners to improve their efficiency and thereby better their own and the community's well-being.

The greatest treasure which this country holds today is the undeveloped skill and vocational possibilities, not only of the thousands of our workers everywhere, but of the great army of youth who pass annually from the doors of our elementary schools to serve in the shop, the field and the office. It is highly important to provide some form of vocational training for every boy who can afford to spend even a year or two.

In the training we offer for the industrial workers of this state, the purpose is twofold. First, to increase

the general intelligence of young workers and to lead them to understand better their social and civic duties. Second, to increase their industrial intelligence and skill and to develop capacity for advancement within a given trade where such opportunity exists, or where it does not, to prepare for some skilled and remunerative work in another line.

The course offered is simple, practical and fundamental. It endeavors by every proper means, to lay a foundation, broad in its character, and one that will bring to the student a knowledge of underlying principles. Those who come to take this course, gain in manual skill and productive power; they gather a certain store of industrial knowledge; but they also acquire a certain initiative, a power of construction that will add definitely to their earning power.

Who May Enter These Courses and How.—These two-year courses are open to any young man, sixteen years or more of age who has a knowledge of the ordinary subjects taught in the grades. No written examinations are required.

Anyone desiring to take these courses should write to C. E. Hewitt, Dean of Engineering, Durham, N. H., giving a full outline of the amount of school work he has taken; which of the courses he desires to take; his reasons for wanting to take the course; his age; and any other information that will assist the Dean of Engineering in deciding whether or not the young man is fitted to take the course.

The course the first year includes instruction in the industrial application of electricity, industrial physics, applied mechanics, mechanical drawing, shop work, practical mathematics, English, military art and American citizenship.

The second year includes instruction in the industrial application of electricity, electric controlling devices, electrical design, shop work, power plant design, the economics of business enterprise, military art and sanitation and hygiene for self, home and shop.

COURSES OF STUDY.

(For details, see description of studies which follow.)

TWO-YEAR COURSE IN INDUSTRIAL ELECTRICITY.

First Year.

First Semester.	Credit Hours	Second Semester.	Credit Hours
Draw. 81, Mech. Draw	2	*Draw. 82*, Mech. Draw	2
E. E. 81, Appl. of Elec	3	*Math. 82*, Pract. Math.	2
Engl. 81, Engl	3	*Mil. Art 82*	2
Math. 81, Pract. Math	2	*Phys. 82*, Indus. Phys	7
M. E. 81, Appl. Mech	3	*Pol. Sci. 82*, Am. Cit	2
Mil. Art 81	2	*Shop 82*, Shop Work	3
Shop 81, Shop Work	3		

Second Year.

First Semester.		Second Semester.	
Econ. 81, Indus. Dev. and B. O	3	*E. E. 84*, Appl. of Elec	3
E. E. 83, Appl. of Elec	3	*E. E. 86*, Elec. Contr. Dev	2
E. E. 85, Elec. Contr. Dev	2	*E. E. 88*, Elec. Design	2
E. E. 87, Elec. Design	2	*E. E. 90*, Power Plant Design	3
E. E. 89, Power Design	3	*Mil. Art 84*	2
Mil. Art 83	2	*Physio. 82*, San. and Hyg	3
Shop 83, Shop Work	3	*Shop 84*, Shop Work	3

TWO-YEAR COURSE IN INDUSTRIAL MECHANICS.

First Year.

First Semester.		Second Semester.	
Draw. 81, Mech. Draw	2	*Draw. 82*, Mech. Draw	2
E. E. 81, Appl. of Elec	3	*Math. 82*, Pract. Math	2
Engl. 81, Engl	3	*Mil. Art 82*	2
Math. 81, Pract. Math	2	*Phys. 82*, Indus. Phys	7
M. E. 81, Appl. Mech	3	*Pol. Sci. 82*, Am. Cit	2
Mil. Art 81	2	*Shop 82*, Shop Work	3
Shop 81, Shop Work	3		

First Semester.		Second Semester.	
Econ. 81, Indus. Dev. and B. O	3	*E. E. 84*, Appl. of Elec	3
E. E. 83, Appl. of Elec	3	*M. E. 84*, Appl. Mech	5
M. E. 83, Appl. Mech	5	*M. E. 86*, El. Mach. Design	2
M. E. 85, El. Mach. Design	2	*Mil. Art 84*	2
Mil. Art 83	2	*Physio. 82*, San. and Hyg	3
Shop 83, Shop Work	3	*Shop 84*, Shop Work	3

DESCRIPTION OF STUDIES.

DRAWING.

PROF. HUDDLESTON, MR. ———.

81. Mechanical Drawing. Mr. ———. 2–39 D.H

This subject is intended primarily to develop power in the individua to express through drawing his ideas, particularly as they relate t industrial problems. To accomplish this, instruction is given in free hand lettering, the use of drafting instruments, and the explanatio and study of systems of object drawing, including projection draw ing as a study of the relation of different views of a given object also of isometric drawing as a study in pictorial representation c machines and machine parts. The whole object is to give powe of expression through the pencil and develop habits of exact thinking For First Year Two-Year Students in Industrial Mechanics and Indus trial Electricity. *Two drawing periods per week. 1st S*

82. Mechanical Drawing. Mr. ———. 2–39 D.H

The object of this is to develop skill and power in the visualizin and sketching of machines and machine tools, such as the studen uses in actual shop practice. The work consists of definite instruc tion and continued practice in the making and the reading c shop and assembly drawings, tracings and blue prints, including study of shop and drafting room methods. For First Year Two-Yea Students in Industrial Mechanics and Industrial Electricity.

Prerequisite—Drawing 81. Two drawing periods per week. 2d S

ECONOMICS.

ASST. PROF. MCKAY.

81. Industrial Development and Business Organization.

Asst. Prof. McKay. 204 Lib

The chief aim of this course is to acquaint the student with th various phases of the industrial development of the United States an with the different types of business organization with special referenc to the present time. This involves a somewhat careful consideratio of the several stages in the industrial development of European coun tries. Some time is given to the study of the monetary and bank ing situation in the United States. For Second Year Two-Year Student in Industrial Mechanics and Industrial Electricity.

2 Lec., 1 Rec. per week. 1st S

ELECTRICAL ENGINEERING.

PROF. HEWITT, ASST. PROF. HITCHCOCK, MR. WHIPPLE.

81. Industrial Application of Electricity.

Asst. Prof. Hitchcock, Mr. Whipple. 1–29 D.H.

In the recitation periods, there is studied the general principles of electricity and magnetism; the general principles involved in the wiring of buildings in order that electricity may be used for electric lighting, electric power and for other domestic purposes; a study is made of the requirements of the National Board of Fire Underwriters in connection with electrical installations.

In the laboratory periods, actual experiments are performed to illustrate the different types of electric wiring, including the use of the various electrical fittings and their proper installations; various experiments are performed to illustrate in a practical way the general principles of electricity and magnetism as taken up in the recitation periods. The laboratory periods run parallel with the recitation periods and give a student the actual practical applications of the different principles taken up. For First Year Two-Year Students in Industrial Mechanics and Industrial Electricity.

2 Rec., 1 Lab. per week. 1st S.

83. Industrial Application of Electricity.

Asst. Prof. Hitchcock, Mr. Whipple. 1–29 D.H.

In the recitation periods, there is described the principles of electric dynamos and motors, both direct and alternating current, the method of computing the size of feeders and transmission circuits; a practical study of measuring instruments, electrical safety devices, switches, wattmeters, etc.; simple switchboard construction and the method used in the care and operation of the switchboard equipment.

In the laboratory periods, actual experiments are performed on dynamos and motors, both direct and alternating current, showing the method of connecting, operating and care of same; experiments are performed to show the fall of potential on transmission circuits and feeders, also the use, adaptability and method of connecting in circuit various types of electrical measuring instruments. For Second Year Two-Year Students in Industrial Mechanics and Industrial Electricity. *2 Rec., 1 Lab. per week. 1st S.*

84. Industrial Application of Electricity.

Asst. Prof. Hitchcock. 1–29 D.H.

In the recitation periods, there is studied the fundamental principles and operation of telephones, including bridging, series and intercommunicating types; a study of commercial testing for faults in dynamos and motors and other electrical devices and a practical study

will be made of general repair work, including materials available for such work and the adaptation of these materials to different classes of repair work.

In the laboratory periods, experiments are performed on the different types of telephones including the taking apart and putting together of every different part of the telephone including transmitter, receiver, induction coil, ringer, magneto, switches, etc.; actual practice will be given in repair work. winding of armatures. transformers, etc.; experiments are arranged for testing out and locating faults in dynamos, motors, transformers, etc. For Second Year Two-Year Students in Industrial Mechanics and Industrial Electricity.

2 Rec., 1 Lab. per week. 2d S.

85. Electric Controlling Devices. Mr. Whipple. 1–29 D.H.

This subject includes a careful study of the various forms of electric controllers; automatic starters used in connection with motors; no voltage and no field release starting rheostats; overload devices, including circuit breakers, time relays, etc., for the protection of motors and dynamos; remote controlling devices; methods and apparatus used for automatically stopping and starting motors at points remote from the motor, including the method of so connecting a pump to an electric motor that it will automatically start when the water in the tank has fallen to a certain level and will automatically stop when the water has reached a certain level. For Second Year Two-Year Students in Industrial Electricity. *2 Rec. per week. 1st S.*

86. Electric Controlling Devices. Mr. Whipple. 1–29 D.H.

This subject includes a careful study of the so-called Tirrell regulators used for automatically keeping the supply voltage constant, including regulators that are adapted for direct current generators and also adapted to alternating current generators, both single phase and polyphase; induction feeder regulators for producing constant voltage on an alternating current feeder when the supply voltage varies between quite wide limits; the principle and operation of mercury arc rectifiers; Murphy electricity rectifiers; the principle and care of electric storage batteries and their application to industrial service; principle and care of transformers, both constant potential and constant current types, and their application to industrial service. For Second Year Two-Year Students in Industrial Electricity. *2 Rec. per week. 2d S.*

87. Electrical Design. Mr. Whipple. 1–28 D.H.

Under this subject is studied some of the fundamental and general principles upon which various electrical apparatus operate, such as controlling devices, rheostats, resistances, arc lamps, incandescent lamps, regulators, switches, circuit breakers, storage batteries, starting

devices, etc. These various devices are examined, taken apart and put together again, in order to see the actual methods of construction, the principles upon which each part operates and the relation of the parts. For Second Year Two-Year Students in Industrial Electricity.

2 Lab. per week. 1st S.

88. Electrical Design. Mr. Whipple. 1–28 D.H.

Under this subject principles are developed by means of which it is possible to figure out resistances, rheostats, switches, electro-magnets, electric controlling devices, etc. For Second Year Two-Year Students in Industrial Electricity. *2 Lab. per week. 2d S.*

89. Power Plant Design. Prof. Hewitt. 1–29 D.H.

Under this subject there is studied the equipment of an ordinary power house from a practical standpoint, special study being given to so-called isolated plants adapted for private use or for community use; the best choice of electrical machinery to meet different conditions; the relation between the various parts of the equipment, including boilers, engines, switchboards, controlling devices, pumps, injectors and other auxiliaries; the operation and care of the equipment; the application and the adaptation in certain cases of fuel oil engines, gasoline engines, gas engines, water wheels as prime movers for operating electric dynamos for the generation of current. For Second Year Two-Year Students in Industrial Electricity.

2 Rec., 1 Lab. per week. 1st S.

90. Power Plant Design. Prof. Hewitt. 1–29 D.H.

Under this subject, there is studied the principles and the practical features in design for hydro-electric developments, including some practical methods of measuring the flow of water, method of constructing dams and methods of measuring amount of power available in a stream; the design and construction of transmission lines, including various materials and supplies available for same; the care of pole line equipment, including the preservation of the poles themselves; the care of transformers, lightning arresters and other devices. For Second Year Two-Year Students in Industrial Electricity.

2 Rec., 1 Lab. per week. 2d S.

ENGLISH.

PROF. RICHARDS, MR. RAYMOND.

81. English. Mr. Raymond. 208 T.H.

The purpose of this subject is to teach self-expression. The man who is unable to present his thoughts clearly in speech or writing is greatly handicapped. Technical skill is robbed of its usefulness to him, because

when he talks, he misrepresents himself. Men who hear him unavoidably, if sometimes wrongly, mark him as lacking in intelligence. This study in English is to teach the student how to make others appreciate him. It is to teach him how to get full value for the skill and intelligence that may be his. It is to enable him to establish correct relations with his fellows.

The work consists of written and oral exercises. The instruction is not a drill in formal grammar, but an attempt in a practical way to develop the use of correct speech. For First Year Two-Year Students in Industrial Mechanics and Industrial Electricity.

3 Rec. per week. 1st S.

MATHEMATICS.

PROF. PETTEE, ASSOC. PROF. STECK, MR. GARABEDIAN.

81. Mathematics. { Assoc. Prof. Steck. D.H.
Mr. Garabedian. D.H.

Special emphasis is placed on the solution of practical problems related to industrial work. The instruction includes a review of the fundamental principles of arithmetic; the use of simple formulas; the use of cross-section paper for graphical representation, etc. For First Year Two-Year Students in Industrial Mechanics and Industrial Electricity. *2 Rec. per week. 1st S.*

82. Mathematics. { Assoc. Prof. Steck. D.H.
Mr. Garabedian. D.H.

Instruction is given in the solution of plane triangles; simple geometrical construction; useful applications of algebra, etc. For First Year Two-Year Students in Industrial Mechanics and Industrial Electricity. *2 Rec. per week. 2d S.*

MECHANICAL ENGINEERING.

PROF. PORTER.

81. Applied Mechanics. Prof. Porter. 2–45 D.H.

The recitation periods are devoted to lectures on the properties, commercial forms and methods of manufacture of the materials most used in engineering, such as wrought iron, cast iron, steel, brass, bronze and cement.

During the laboratory periods experiments are made to determine the yield point, the breaking load per square inch, elongation and reduction of area of samples of material such as cast iron, wrought iron and steel. Experiments are made on the compressive and tensile strength of cement. For First Year Two-Year Students in Industrial Mechanics and Industrial Electricity. *2 Rec., 1 Lab. per week. 1st S.*

83. Applied Mechanics. Prof. Porter. 2–48 D.H.

In the recitation periods there is studied steam boilers, types of steam boilers, fire tube boilers, water tube boilers, boiler calculations, stays and stayings. heat and work, properties of steam, fuels, methods of firing, smokeless combustion of fuel, settings, pipings and boiler fittings, boiler accessories, inspection and care of boilers, types of steam engines, selection of types, rotative speed, piston speed, mean effective pressure, steam engine indicators, calculation of horse power, condensers and pumps, feed water heaters and economizers.

During the laboratory periods exercises are given on valve setting, tests of steam boilers and engines, tests of auxiliary apparatus and pumps. These exercises are carried on so as to illustrate by practical application the principles taught during the recitation periods. For Second Year Two-Year Students in Industrial Mechanics.

3 Rec., 2 Lab. per week. 1st S.

84. Applied Mechanics. Prof. Porter. 2–48 D.H.

During the recitation periods studies are made of gas engines, gas engine cycles, types of gas engines, methods of governing, methods of ignition, carburetors, gasoline and oil engines, natural gas, artificial gas and producer gas.

The Laboratory periods are devoted to tests on gas engines. For Second Year Two-Year Students in Industrial Mechanics.

4 Rec., 1 Lab. per week. 2d S.

85. Elementary Machine Design. Prof. Porter. 2–40 D.H.

Including rivets and rivet joints, screw threads and bolts, keys and cotters, journals, crank pins and collar bearings, axles and shafts, tooth gearing, belts and pulleys. Instruction includes practice in sketching, designing and making working drawings of machine details, the use of formulas and handbooks. For Second Year Two-Year Students in Industrial Mechanics. *2 Lab. per week. 1st S.*

86. Machine Design. Prof. Porter. 2–40 D.H.

The complete design of some simple machine, including calculation on the strength of the different parts and the making of complete working drawings. For Second Year Two-Year Students in Industrial Mechanics. *1 Rec., 2 Lab. per week. 2d S.*

MILITARY ART.

CAPT. HUNT.

Unless excused by proper authority, all male students are required to complete two years' satisfactory work in military art.

Military Art 81, 82, 83, 84. Capt. Hunt. 105 Armory.

Same as Military Art, 1, 2, 3 and 4, page 112.

PHYSICS.

PROF. SUYDAM, MR. MORAN, MR. EMERSON.

82. Industrial Physics.

Prof. Suydam, Mr. Moran, Mr. Emerson. 1–35 D.H.

Devoted to the applications of scientific principles of mechanics and heat to practical uses. The mathematics needed are of the simplest, and particular attention is paid to good ways of calculating. Problems in large numbers are used for the illustration of the principles, and practice in the use of scientific instruments and in the experimental illustration of principles is given in the laboratory.

The work includes the laws of water pressure in pipes, tanks, etc.; the principle of work, and the efficiency of ideal and actual levers, pulleys, screws and their combinations; the laws of gas pressure, barometers, siphons, pumps; kinetic and potential energy of moving, falling and rotating bodies, pendulums, clocks, flywheels, the hydraulic ram, etc.; elasticity and springs; temperature and thermometers, expansion and contraction, the measurement of heat, boiling, freezing, the properties of steam, combustion, heat conveyance, pipes and lagging, the relation of heat and work, heat engines. For First Year Two-Year Students in Industrial Mechanics and Industrial Electricity.

2 Lec., 2 Rec., 3 Lab. per week. 2d S.

NOTE.—A deposit of $1.00 is required at the beginning of the semester, for notes and breakage; balance returned at end of year.

PHYSIOLOGY.

PROF. JACKSON.

Physiology 82. Sanitation and Hygiene. Prof. Jackson. 212 T.H.

The purpose of this subject is to increase and maintain the efficiency of the human machine. With this in view, it will deal with the following:

(a) Sanitation of the Home. There are discussions of the proper and improper sewage disposal; water supply; ventilation and other conditions of the home calculated to spread or favor the development of disease.

(b) Shop Sanitation. A discussion of the spread of bacterial diseases through improper shop sanitation. The effect of dust and other waste material on the health of the workmen and the importance of sunlight and proper ventilation.

(c) Personal Hygiene. A discussion of clothing, proper food, both mental and physical exercise, and other matters of personal hygiene.

(d) First aid treatment of injuries received in shop work is considered, including the prevention of wound infection, permanent treatment of minor injuries and temporary treatment of major injuries pending the arrival of a physician.

Private conferences are solicited with students on any special problem of Hygiene and Sanitation. For First Year Two-Year Students in Industrial Mechanics and Industrial Electricity.

3 Rec. per week. 2d S.

POLITICAL SCIENCE.

PROF. SCOTT, MR. SCOTT.

82. American Citizenship. Mr. Scott. 202 Lib.

This subject proceeds on the theory that a proper and necessary equipment for life includes training in the fundamental principles of good citizenship. The broad principles of the national constitution are considered, together with a brief study of the constitution of New Hampshire. The subject, however, is concerned chiefly with practical illustrations of the duties of citizenship and the relationship of man to man. For First Year Two-Year Students in Industrial Mechanics and Industrial Electricity. *2 Rec. per week. 2d S.*

SHOP.

PROF. PORTER, MR. BATCHELDER, MR. MCBRIDE.

81. Shop Work. Mr. Batchelder. Second Floor of Shop.

Practice in the use of wood working tools; laying out work from drawings, mortising and framing; bench work and joinery; wood turning; the use of band and circular saws and wood planer. For First Year Two-Year Students in Industrial Mechanics and Industrial Electricity. Fee $2.00. *3 Lab. per week. 1st S.*

82. Shop Work. Mr. Batchelder. Second Floor of Shop.

Exercises in the construction of solid, split and loose piece patterns and core boxes, such as are found in ordinary practice in commercial pattern shops; practice in floor and bench moulding with different kinds of moulding sand, setting of cores and risers, methods of gating and venting, charging and managing the cupola. For First Year Two-Year Students in Industrial Mechanics and Industrial Electricity. Fee, $2.00. *3 Lab. per week. 2d S.*

83. Blacksmithing. Mr. McBride. Forge Shop.

This is a study in the forging of iron and steel and is designed to teach the operations of drawing, upsetting, welding, twisting, splitting and punching. A study is made of the construction, care and management of the forge and instruction given in tempering, case hardening and annealing. For Second Year Two-Year Students in Industrial Mechanics and Industrial Electricity. Fee, $1.50.

3 Lab. per week. 1st S.

84. Machine Shop Work. Mr. McBride. Forge Shop.

Exercises in bench work, chipping, filing and scraping and laying out of work from drawings; a study of cutting edges and tool adjustments best suited for different metals together with a study of cutting speeds and feeds. Practice in operating the principal machine tools, such as the shaper, lathe, drill press, planer and milling machine. For Second Year Two-Year Students in Industrial Mechanics and Industrial Electricity. Fee, $2.00. *3 Lab. per week. 2d S.*

THE WINTER SHORT COURSES IN AGRICULTURE.

The college offers these short courses for the purpose of affording an opportunity for the boys, the young men, and the older men and women on the farms of our state to acquaint themselves with the latest and most approved principles and practices of agriculture. Since many of our farm people find it impossible to leave their homes during the spring, summer and fall months, these courses are given during the winter when most people can find time to slip away for at least a week.

There is no longer any question concerning the value of practical scientific training for those who are engaged in farming. The increasing interest in agricultural work, the higher prices of farm products and the keener competition in all lines of production is making an education and training more and more a necessity for the people on our farms. It is hoped that these "short courses" will open an additional avenue through which the college may prove its value and usefulness to the farmers of the state.

FARMERS' WEEK.

The tenth annual Farmers' Week will begin *Tuesday, January 1.* A special program of the exercises during the week will be issued during the holidays, a copy of which will be sent to any one upon request.

This course is designed to meet the needs of the every-day practical farmer and his wife who cannot leave home for more than a few days but who wish to get some new ideas concerning the latest and best methods of farm, orchard and dairy operations and of household work.

Meetings of various state organizations will be held during the week in connection with the regular program.

DAIRY COURSE.

The twenty-third annual Dairy Course will open *Monday, February 4*, and will close *Friday, March 8*.

Students expecting to take this course should present themselves at the Registrar's office in Thompson Hall on the opening day. Lectures and laboratory work will begin on the day following.

Instruction in Dairy Practice.—Instruction in the Dairy Course is given by lectures and recitations and by laboratory work in the barn, dairy and creamery. The equipment in the dairy building is such that the laboratory work can be made applicable both to farm and factory conditions. The student will have an opportunity to study the construction, efficiency, and operation of the various machines used in handling of milk and making of butter. The use of the Babcock test in apportioning the money value of milk is regulated by state law. The importance of the test in the successful improvement of the dairy herd is becoming more and more apparent. The details of the test will be studied, and the student will practice testing milk, cream, skim-milk and buttermilk until fully competent to perform the work either for himself or for others.

The course in every respect is made as practical as possible. The instruction is planned to meet the needs of two classes of students: first, *buttermakers* and *ice cream makers*, second, *dairymen* and *milk producers*.

Opportunities in Dairy Work.—The need of competent, trained dairymen is greater than ever before. There is an increasing demand for high grade dairy products, such as butter, cheese, ice cream and condensed milk, and the making of these calls for first-class dairymen. The continuous campaign for pure milk in our cities is constantly opening up new positions for milk inspectors, and for men with training who can successfully manage dairy farms and care for the herd so as to produce sanitary milk economically. It also opens positions for men who are capable of operating

milk depots and other dairy establishments. The organization of cow-test associations is opening up a new field for dairy workers. Although the dairy department does not guarantee to find positions for those registered in the course, it has opportunities to recommend students for a large number of positions. Inquiries for competent men are received throughout the year and thus far the College has been unable to supply men for all the places it has been asked to fill.

Equipment.—The New Hampshire College with its new dairy building offers excellent opportunities for giving instruction in practical dairy work.

Entirely new equipment has been installed in the college creamery, each piece of machinery being run by an individual electric motor. In addition to the milk obtained from the college herd, the creamery receives milk and cream from about forty farms. By this arrangement sufficient milk for practical work is furnished at all times. The farm dairy is equipped with the leading kinds of hand separators and hand as well as small-power churns suitable for private dairies. The milk-testing and milk inspection laboratory is equipped with Babcock testers, sediment testers, acidmeters, and other apparatus necessary for inspection of milk and cream both as to fat content and other qualities. The creamery also contains bacteriology laboratories, a lecture room, offices, a reading room and an up-to-date milk bottling plant.

Dairy Cattle.—Representatives of the Jersey, Guernsey, Ayrshire and Holstein breeds are owned by the college and are used to acquaint the students with the different breeds and types of dairy cattle.

Prizes.—Through the courtesy of Mr. Thomas Jones Davis of Duluth, Minnesota, three suitable prizes will be given to students who rank the highest in judging dairy cattle of the different breeds.

Expenses.—Tuition in the short courses is free to residents of New Hampshire. Non-residents will pay a tuition fee of $2 for each of the one-week courses and $10 for the dairy course. Board and room will cost between $5 and $6 per week. Other expenses, including books, need not exceed a total of $5, although an allowance of $10 for the purchase of books to be taken home would be a good investment.

DESCRIPTION OF SUBJECTS TAUGHT IN THE DAIRY COURSE.

DAIRY PRODUCTS.

PROF. FULLER, ASST. PROF. WILSON, MR. AMBROSE.

Dairying 40. Butter Making and Ice Cream Making.

Lectures and recitations on the different systems of creaming milk; a comparison of the efficiency of different cream separators under varying conditions; cream ripening; churning, washing, marketing and scoring of butter; plain and fancy ice cream; ices.

2 Lec., 2 Lab. per week.

Dairying 41. Dairy Bacteriology.

Lectures and demonstrations on the function of bacteria and the application of bacteriological principles to dairy work, such as pasteurization, cream ripening, commercial starters and deterioration of butter.

2 exercises per week.

Dairying 42. Market Milk.

A study of the value of milk as a food and its relation to public health. The production and handling of market milk and certified milk. Commercial milk inspection. Exercises are given in the scoring of milk and cream, and in the scoring of dairies.

2 Lec., 1 Lab. per week.

Dairying 43. Milk Testing.

This subject consists of a study of the composition, the physical and chemical properties of milk, the various methods of sampling and testing milk and cream, the testing of dairy herds and organizing and operating cow test associations.

2 Lec., 2 Lab. per week

DAIRY CATTLE.

PROF. ECKMAN, MR. FAWCETT.

Animal Husbandry 42. Breeds and Breeding.

Lectures and recitations upon the origin, history, characteristics, and adaptability of the breeds of dairy cattle. The practical work consists of scoring and judging the various breeds, and in tracing pedigrees of animals in the herd books.

2 lectures and 1 judging period per week.

Animal Husbandry 44. Diseases of Cattle.

This subject consists of lectures and recitations upon the anatomy and physiology of the cow, with special reference to the digestive, reproductive and milk-producing organs. The common diseases, their causes and the methods of treatment are discussed.

2 exercises per week.

Animal Husbandry 45. Feeds and Feeding.

Lectures and recitations upon the composition and digestibility of feeding stuffs. A detailed study of the different grains and feeds, and their value in a dairy ration. Practice is given in computing and mixing rations for the dairy cow, and in fitting animals for the show ring.

3 exercises per week.

NEW HAMPSHIRE AGRICULTURAL EXPERIMENT STATION.

Most of the agricultural experiment stations of the various states, including that of New Hampshire, were founded in 1888 by an act of congress, approved March 2, 1887, known as the Hatch Act, in honor of its author. This act appropriated fifteen thousand dollars ($15,000) annually for the maintenance of an agricultural experiment station in each state. This act provides:

"That it shall be the object and duty of said experiment stations to conduct original researches or verify experiments on the physiology of plants and animals; the diseases to which they are severally subject with the remedies for the same; the chemical composition of useful plants at their different stages of growth; the comparative advantages of rotative cropping as pursued under a varying series of crops; the capacity of new plants or trees for acclimation; the analysis of soils and water; the chemical composition of manures, natural and artificial, with experiments designed to test their comparative effects on crops of different kinds; the adaptation and value of grasses and forage plants; the composition and digestibility of the different kinds of food for domestic animals; the scientific and economic questions involved in the production of butter and cheese; and such other researches or experiments bearing directly on the agricultural industry of the United States as may in each case be deemed advisable, having due regard to the varying conditions and needs of the respective states and territories." The act also provides that the results of such work shall be published in bulletins and reports.

A further endowment of the experiment stations to provide specifically for research work was made by the Adams Act, passed by congress and approved March 16, 1906, which provided an increased annual appropriation which

now amounts to $15,000 each year. This appropriation is specifically limited to the "necessary expenses of conducting original researches or experiments," and the rulings of the United States Department of Agriculture, which is vested with the supervision of the expenditures under this act, require that this appropriation be spent in fundamental investigations or researches to determine the underlying causes and principles of agricultural science, rather than for mere experiments to secure results of immediate practical application as contemplated under the Hatch Act appropriation. The purposes of the two acts are, therefore, supplementary but distinct.

The New Hampshire Agricultural Experiment Station is organized as a department of the New Hampshire College of Agriculture and the Mechanic Arts, and is administered by a board of control, elected by its board of trustees.

The publications of the station comprise 181 bulletins of the regular series and 17 circulars, 11 technical bulletins, 9 scientific contributions, and 4 school bulletins. The bulletins are issued at irregular intervals and are sent to all residents of New Hampshire requesting them. Back numbers will be sent as long as the supply lasts. Lists of available publications will be sent upon request.

The above quotations taken from the Hatch and Adams acts are sufficient to indicate the true function of this and other experiment stations called into being by the passage of those laws. At first the experiment stations found it difficult to resist the popular demand made upon them to enter the extension field, to the neglect of research, but it is to the credit of the officials having the directing and executing of those laws in charge that our stations have proved true to their trust. If the stations had not devoted their energies to the fields of original research our agriculture could not possibly be upon the high plane which it occupies to-day.

The introduction of the extension service as a recognized part of the work of this and other similar institutions only serves to emphasize the importance of experiment station

work. In our haste to produce immediate results we sometimes lose sight of the value of the work of our experiment stations. We do not realize the debt agriculture owes to the scientists who are willing to devote their life work to the study of one subject, or at least a very few subjects, without thought to personal ambition and advancement, but purely seeking after truth and the advancement of science.

We can, perhaps, best indicate in a brief way the present work of the New Hampshire Experiment Station by calling attention to some of those projects which are receiving special study and attention.

ADAMS FUND.

Botanical Department.—A study of the toxic action of fungicides to parasitic fungi; physiology of the apple; a study of the effect of fungicides and insecticides on plants; a histological study of the fruit branches of the apple.

Chemical Department.—Potash in clay soils; chemical studies of the apple; a study of adhesiveness of spray materials.

Entomological Department.—Control of root maggots by insecticides.

Horticultural Department.—Plant breeding: carnation breeding, squash breeding; fruit bud formation.

Animal Husbandry Department.—Sheep breeding.

The New Hampshire Agricultural Experiment Station is glad to give advice and assistance regarding all lines of agriculture. The experiment station is at all times at the service of the citizens of New Hampshire.

HATCH FUND.

Agronomy Department.—Variety tests of corn; ear row est of corn; fertilizer tests on grass lands; alfalfa improvement; clover plant selection; timothy selection and breeding; investigations on potato culture and fertilization.

Botany Department.—Effect of storage temperature on he keeping qualities of potatoes; the snapdragon rust and ts control.

Entomological Department.—Control of black flies and nidgets; economic collection of insects; arsenical residues on fruit, foliage and grass, following spraying; the control of browntails.

Horticultural Department.—Variety tests of plums; variety tests of apples; variety tests of small fruits; blueberry industry in New Hampshire.

Forestry Department.—Experiments in raising forest tree seedlings; experiments in establishing artificial forests of different species; experiments in immature white pine stands.

EXTENSION SERVICE.

The last few years have witnessed in this country a remarkable growth in the development of methods of teaching agriculture. The attitude of the public in general, as well as the rural population, toward technical agricultural training has become decidedly favorable. This change in feeling by the public toward the work of institutions offering training in agriculture has made possible and is responsible to a large extent for the unprecedented progress which has been made in agricultural teaching during the last dozen or fifteen years.

The extension service is intended to serve as a medium by which to take the work of both the college classroom and the experiment station fields and laboratories directly to

the homes and to the fields of the farmers. It is very diffi cult to place any just estimate upon the value of such serv ice to a state or to the nation. The farmer's cause is n longer considered of interest only to him. It is recognize today as never before that upon the prosperity of th farmer depends quite largely the general prosperity of a classes of people. The present high cost of living has don much to attract the attention of people to the relatio which the farmer and his interests bear to them personally

What the colleges and universities are to those youn men and young women who come within their walls, th extension service is, only to a lesser degree, to the thousand who are beyond the reach of the classroom. In this state for example, we have six hundred and sixty-three student enrolled at New Hampshire College, while there is a rura population in the state of nearly two hundred thousand many of whom it is possible to reach in some tangible an helpful way through the extension service.

Space will allow only sufficient room to name some of th activities of the extension service which have been give special emphasis during the past year. This brief outlin will perhaps serve to indicate in a general way the scope o the work and something as to its value to the industria interests of the state.

Correspondence: Letters of inquiry.

Field Demonstrations: In coöperation with farmers.

Variety Tests of Corn: In coöperation with farmers, an on county farms.

Top Dressing Hay Lands: In coöperation with farmers.

Value of Lime on New Hampshire Soils: In coöperatio with farmers.

Orchard Sod Mulch.

Spraying Demonstrations.

Orchard Cover Crops.

Pruning and Spraying Demonstrations.

Agricultural Reading Courses: Nine subjects.

Special Days at the College: Orchard Day, Poultry Day, Dairy Day.

College and Station exhibits at Fairs and at Agricultural meetings.

Boys' Club Work.

Girls' Club Work.

Extension Publications: 61 extension press bulletins, 19 extension circulars, 7 extension bulletins.

Extension literature is sent to a mailing list of 12,000 in the state. Publications are sent free to every one requesting them.

COÖPERATIVE AGRICULTURAL EXTENSION WORK SMITH-LEVER FUND.

Under the provisions of an act of Congress approved May 8, 1914, New Hampshire, the same as every other state, receives the sum of $10,000 from the federal government for supplementing and strengthening the extension work of the Agricultural College.

In addition to the annual appropriation of $10,000, each state is to share in increased allotments for seven years in the proportion which the rural population of each state is to the total rural population of all the states as determined by the next preceding federal census provided the state shall appropriate an equal sum. If New Hampshire fulfills her part in carrying out the provisions of the Smith-Lever law, the state will receive in 1922–23 and thereafter, from the federal government, annually the sum of $24,572, for conducting coöperative demonstration work in agriculture and home economics.

This financial assistance from the federal government

coming to New Hampshire as it does at a time when state and other funds are inadequate for meeting the demands which are constantly being made upon the college, will make it possible for the extension service to strengthen and develop its work along all lines and inject new life into every branch of the service.

The organization of distinct departments or divisions of extension service in connection with our state colleges and universities gives recognition and standing to the threefold function teaching resident students; conducting investigations; and carrying information and assistance from the college and station into all parts of the state, or extension work of the institution.

It will no longer be necessary for the experiment stations to carry on general miscellaneous demonstrations under the guise of experiments. In the earlier history of our experiment stations, before the work was clearly defined, they were practically compelled by popular demand to engage in demonstration work.

The extension service with its own corps of men will relieve the college teaching staff and station workers from much of the miscellaneous extension work which they, of necessity, have been compelled to carry on in the past.

This new organization will permit the selection and assigning of such duties to the individual as he seems best fitted to perform, which will work for efficiency in all three departments or divisions. We have the Smith-Lever law to thank for hastening the time of bringing these things to pass.

The United States Department of Agriculture has created what is known as the States Relations Service to take charge of and coöperate with the several states in carrying out the provisions of the Smith-Lever law. Having the extension work of each state closely associated with the work of the United States Department of Agriculture through the States Relations Service will be a very potent factor in unifying and strengthening the extension work throughout the United States.

In starting the coöperative extension work in New Hampshire it has been the plan *first* to perfect an efficient organization through which to work; *second*, to recognize and attempt to assist in the development of the most important branches of agriculture in the state and to meet the most urgent needs for assistance in home economics.

In carrying out this general scheme and the provisions of the memorandum of understanding entered into with the States Relations Service, whereby all extension work conducted with Smith-Lever funds shall be on the project basis, approved by them, the following nine projects have been adopted.

Project No. 1. Organization of Coöperative Agricultural Extension work.

Project No. 2. County Agricultural Agents.

Project No. 3. Extension Instruction—Home Economics.

Project No. 4. Dairy Cow Test Associations.

Project No. 5. Orchard Demonstrations.

Project No. 6. Extension Schools.

Project No. 7. Demonstrations in Vegetable Gardening.

Project No. 8. Farm Management Demonstrations.

Project No. 9. County Farm Home Demonstration Agents.

Project No. 1: *Organization of Coöperative Agricultural Extension Work.*

Project No. 1 has to do with the general organization and administration of the extension work conducted with Smith-Lever funds.

Project No. 2: *County Agricultural Agents.*

Emphasis has been given to county agricultural agent work because it has been demonstrated beyond question that by having an extension representative located in each county, it makes the most efficient organization within a state for conducting extension activities.

The county agent movement serves also as an important means by which the extension service of the college may enter into coöperative agreements with the County Farmers Associations and with the Office of Extension Work in the North and West, a new office in the States Relation Service United States Department of Agriculture which has immediate charge of the coöperative extension work in the northern and western states.

For financial reasons the county agent movement through the plan of coöperation cited above makes available $4 for every $1 of college Smith-Lever funds expended in the county, which, in view of the unquestioned value of county agent work, commends this type of extension service.

We have eight of the ten counties organized at present and as soon as the other two counties can be organized it is planned to appoint agents so that there will be an agent in each county in the state.

A state leader of county agent work has been appointed to take immediate charge of the work. The state leader is employed jointly and represents the extension service of the college and the United States Department of Agriculture.

Project No. 3: *Extension Instruction, Home Economics.*

The Smith-Lever law makes provision for giving demonstration work in home economics. The college receives a great many requests for lectures and demonstrations in home economics from all parts of the state. These demands have been met as far as possible. A woman has been employed to organize women's clubs in different parts of the state. The instructor gives demonstrations and instructions in home economics which will tend to stimulate more interest in rural life and help to improve the healthfulness, the social life, and the economic conditions of the farm homes of the state.

The instructor in home economics plans to visit the clubs at least once a month and whenever possible twice a month. Courses for reading and study are outlined to cover ten to

twelve months and have to do with foods, household management, textiles and clothing, and the care and feeding of children.

Project No. 4: *Dairy Cow Test Associations.*

There are twelve dairy cow test associations in successful operation in the state. These organizations are playing an important part in improving diary conditions. Through these associations the dairy farmers are enabled to weed out unprofitable cows, they are encouraged to keep better stock, keep records of farming operations, and to feed their animals more judiciously and economically. This work reveals the truth to the dairy farmer.

A man is placed in charge of dairy cow test association work in the state to assist in the organizing of new associations, to work with the testers, to see that they are making the most of their opportunities, to be of service to the members of the associations, and to compile and publish the results of the work.

Project No. 5: *Orchard Demonstrations.*

New Hampshire is naturally an orchard state and there is a lot of interest being taken in all forms of fruit-growing. Orchard culture makes up an important branch of the agriculture of the state.

In order that the extension service may be of the greatest service to the fruit-growers of New Hampshire a man has been engaged to devote all of his time to carrying on orchard demonstrations and to giving instructions in fruit culture.

Pruning, spraying, and packing demonstrations are given at the proper season and definite forms of orchard demonstrations setting forth approved orchard practices are carried on in coöperation with practical growers of the state. Meetings are held in the demonstration orchards from time to time so that results may be noted.

Project No. 6: *Extension Schools.*

To meet the demand for assistance in community improvement work movable schools have been organized.

The schools are held preferably in some of the smaller rural communities as they seem to be especially appreciated in such localities. These schools last four days and the lectures and demonstrations are made just as practical as it is possible to make them. Wherever possible the demonstrations are given in the field, the orchard, or in a barn in the neighborhood.

The extension schools offer exceptional opportunities for the extension service to become acquainted with the people and the needs of the communities. Owing to the pleasant relations which are established through the medium of the schools it is possible to render still more valuable assistance to these neighborhoods through follow-up work.

Project No. 7: *Demonstrations in Vegetable Gardening.*

Vegetable gardening is a much neglected branch of farming in New Hampshire. Our manufacturing cities in the state create good markets. At present a large part of the vegetables consumed in our cities are grown outside the state.

For many reasons our market gardeners are not realizing from their labors and investments what they should. It is with a desire to be of service to some of those engaged in growing vegetables for market that an experienced and trained market gardener has been employed to work with the market gardeners in the vicinity of Manchester, Nashua and Concord. The work is of a practical nature and the demonstration plots are carried on in coöperation with growers supplying vegetables for local markets.

It is hoped to show through these demonstration plots how the growers may meet more acceptably the demand of the local markets, and at the same time make it profitable for them to do so.

Project No. 8: *Farm Management Demonstrations.*

The New Hampshire State College is coöperating with the United States Department of Agriculture in making studies of the various systems of farm management in al

parts of the state in order to determine the best systems of farming for each locality.

Four hundred and fifty farm surveys have been made in eight counties. Most of these records have been returned to each individual farmer in the area covered by the survey in such a way that he can compare his own farm records with the average, and some of the best farms in that part of the state.

Project No. 9: *County Farm Home Demonstration Agents.*

The first two counties to organize for county agent work, Sullivan and Cheshire counties, were the first to organize a Woman's Auxiliary to the County Farmers Association and employ a woman agent. The county farm home demonstration agent has much the same relation to the farm home and the rural life in general that the county agent has to the farm work and general agricultural interests of the county. The local or county leader has an opportunity to become well acquainted with the people in the county and the greatest opportunities for serving the people. While some work is done with individuals a larger part of the teaching of the county home demonstration agent is done through groups of women and is in the form of demonstrations.

The farm home demonstration work promises to be as popular and as valuable as the county agent movement. The interest is spreading to other counties.

This covers in a brief way the plan of organization and lines of work which have been inaugurated with Smith-Lever funds for conducting extension work in agriculture and home economics in New Hampshire.

DEGREES AND HONORS, 1916.

MASTER OF SCIENCE.

Raymond Jackson Bean, B.S., 1915 ..... Laconia

BACHELOR OF SCIENCE.

Agricultural Division.

Ralph Josiah Bugbee ..... Claremont
Perry Warren Burt ..... Westmoreland
Walter Edwin Chamberlain ..... South Natick, Mass.
Dura Prescott Crockett ..... New London
Stephen Webster Dyer ..... Lawrence, Mass.
Frank Drew Ellsworth ..... Pembroke
John Corbin Hadley ..... Durham
Leon Abbott Hawkins ..... Plymouth
Wesley Everett Howard, Jr. ..... Belmont
Stephen Guy Johnson ..... Winchester
Everett Harmon Kelley ..... Barnstead
Misak Minas Mazmanian ..... Huseynig, Armenia
Westley Joseph Nelson ..... Manchester
Vincent Aubert Perkins ..... Claremont
Lewis Byron Robinson ..... Concord
Herbert Richard Runnals ..... West Lebanon
Albert Eaton Smith ..... Hudson
Victor Haskell Smith ..... Hudson
Joseph Albert Sullivan ..... Dover
William Thorpe Tapley ..... Revere, Mass.
Charles Adolph Weigel ..... Lawrence, Mass.

Arts and Science Division.

Guy Wetherbee Chase ..... Londonderry
Alice Veva Coffin ..... Boscawen
Rosina Martha Diettrich ..... Boston, Mass.
John Dana Lary ..... Berlin
Michael Riley McGreal ..... Somersworth
Lillian Wallace Mack ..... Derry
Philip Harlan Pennell ..... Suncook
James Alson Purington ..... Hopkinton
Bernice Reed ..... Claremont
Eldred Louis Sanborn ..... Lochmere
Carroll Charles Waldron ..... Center Strafford
Etta Seaward Waldron ..... Center Strafford
Olin Charles Work ..... Exeter

Engineering Division.

William Henry Barr.....South Natick, Mass.
George Wilbur Burke.....Concord
Ralph Waldo Doeg.....Exeter
Edward Deering Fuller.....Atkinson
Robert Foss Hayes.....Dover
Norman Cannavan Hurd.....Dover
Edward Clarence McDuffee.....Claremont
Stephen Noyes Morse.....Ashland
William Remick Partington.....Portsmouth
Neil Abner Sargent.....Concord
Kenneth Earl Sawyer.....Manchester
George Thomas Studd.....Berlin
Pitt Sawyer Willand.....Dover

BACHELOR OF ARTS.

Harold Sunderlin Brown.....Manchester
Lloyd Ridley Brown.....Concord
Genevieve Adrienne Jeanette Charbonneau.....Nashua
Melissa Annis Cilley.....Colebrook
Mary Clementine Dole.....Enfield
Florence Lillian Dudley.....Reeds Ferry
Marion Grace Dudley.....Newmarket
Bernard Henry Dwight.....Manchester
Nettie Edith Austin Finley.....Dover
Mildred Maleham Flanders.....Rochester
Helen Agnes Hallisey.....Nashua
Marion Ruth Jenness.....Dover
Flavia Locke Jones.....Exeter
Robert Irving McCartney.....Kingston
Fred Sanford Manter.....Manchester
Marion Edwena Mitchell.....Newmarket
George Albert Nelson.....Exeter
Charles Swett Pettee.....Durham
Robert Carl Smith.....Exeter
Harold Arthur Steele.....Manchester
Earle Frederick Swett.....Andover
Robert Jordan Torrey.....East Putnam, Conn.
Walter Ira Waite.....Concord
Paul Stanwood Ward.....Milford
Nellie Lydia White.....Enfield

TWO-YEAR CERTIFICATES.

Eloi Augustus Adams.....Wellesley, Mass.
Neal Davis Andrew.....Littleton

George Albert Bassett.....Fremo
Ellwood Vance Bennett.....Lacon
Robert Stebbins Callender.....Bethlehe
Dwight Edward Carlton.....Lancast
Charles Henry Colby.....Francon
Carl Elmer Crowley.....Ashlar
Adna James Cutting.....Orfo
Clark Edwin Davis.....Salem Dep
Harold Lowell Eastman.....Concor
Paul Baxter Gay.....New Londc
Arthur Ernest Goodrich.....Wolfebo
Chester Earle Gould.....Newton Junctic
Sidney James Green.....Munsonvil
David Herbert Harling.....Jaffre
Elmer Cutting Hughes.....Ashlan
Harold Fay Hunt.....Lebanc
Elwyn Duane Joslyn.....Durha
William Augustus Megrath.....Loudc
Dean Bixby Merrill.....North Sutto
Edward James Norman, Jr.....Lee, Mas
Raymond Alan Norris.....East Derr
Oscar Sigfred Olson.....Concor
Charles Wesley Poland.....Lebano
Lee Laughna Rice.....Worcester, Mas
Kenneth Samuel Russell.....Exete
Allen Hyde Schoolcraft.....Cheeve
Herbert Arthur Smith.....Newfielc
Aretas Blood Sutherland.....Plymout
Harold Franklin Swett.....Andove
Ralph Henry Turner.....East Jaffre
Raymond Leavitt Turner.....North Reading, Mas
Harlan Jefferson Whitcomb.....Brooklin

HONOR LIST FOR 1916.

SPECIAL HONOR.

Average of 90 for the year's work.

1916.

Stephen Guy Johnson. Michael Riley McGreal.
Walter Ira Waite.

1917.

Phyllis Mary Blanchard.
Marion Olive Chase.
Isabel Jane Fernald.

1918.

Ruth Whitney Hadley.
Martha Luena Hoitt.

1919.

Mary Robinson Cressey
Dorothy Hanson.
Madeline Lona Pinkham
Louise Mary Richmond.

Two-Year Agriculture, Second Year.

Everett Woodman Webster.

HONOR.

Average of 85 for the year's work.

1916.

George Wilbur Burke.
Genevieve A. J. Charbonneau.
Melissa Annis Cilley.
Alice Veva Coffin.
Dura Prescott Crockett.
Mary Clementine Dole.
Marion Grace Dudley.
Stephen Webster Dyer.
Leon Abbott Hawkins.
Wesley Everett Howard, Jr.
Lillian Wallace Mack.
Charles Swett Pettee.
James Alson Purington.
Neil Abner Sargent.
Robert Jordan Torrey.
Pitt Sawyer Willand.

1917.

Goldie Basch.
Vance Whiting Batchelor.
Gladys Alice Brown.
Arthur Samuel Burleigh.
Louise Elizabeth Burpee.
Natalie Drew Ewer.
Alice Fernald.
Frances Dorotha Hatch.
Isabel Marie Morey.
Arthur Richardson Morgan.
Henrietta Nudd.
Julia Aurelia Roberts.
Alberta Neal Steuerwald.
Clark Leavitt Stevens.

1918.

Charles Cummings.
Heman Charles Fogg.
Florence Julia Harris.
John Edwin Humiston.
Elmer Nason Sanders.
Ethel May Walker.

Rollins Wentworth.

Henry Putney Bachelder. } (As of 1915)
Rollins Wentworth. }

1919.

Esther Leavitt Carpenter.
Frank Adin Joy.
Alice Bowdoin Kemp.
Ada Caroline Langley.
Carl Frederick Matthes.
Palmer Bruce Place.
Miriam Sanders.
Karl Leland Wildes.

Special.

Harold Crawford Main.

Two-Year Agricultural, 1916.

Eloi Augustus Adams.
Arthur Ernest Goodrich.

Two-Year Agricultural, 1917.

Ralph Benton Emery.
George Cavis Minot.

Two-Year Engineering, 1917.

Wesley Watson.

PRIZE RECORD FOR 1916.

BAILEY PRIZE.

GIVEN BY DR. C. H. BAILEY, CLASS OF '79 AND E. A. BAILEY, CLASS OF '85.

NEIL ABNER SARGENT, Concord.

ERSKINE MASON MEMORIAL PRIZE.

JAMES ALSON PURINGTON, Hopkinton.

CHASE-DAVIS MEMORIAL MEDALS.

Gold Medal.

ELDRED LOUIS SANBORN, Lochmere.

Silver Medal.

CHARLES SWETT PETTEE, Durham.

SENIORS STANDING HIGHEST IN MILITARY DEPARTMENT.

Dura Prescott Crockett, New London.

WINNERS OF INDIVIDUAL PRIZE DRILL.

Gold Medal.

Alfred Newman Graham.

Silver Medal.

Leroy Arthur Boutwell.

Bronze Medal.

Harvey Foss Jenkins.

PRIZE SABRE—EXCELLENCE IN DRILL.

Ray Towle Roberts, Concord.

SENIORS REPORTED TO ADJUTANT-GENERAL OF THE ARMY FOR APTITUDE IN MILITARY DEPARTMENT.

Dura Prescott Crockett, New London.
Walter Ira Waite, Concord.
George Wilbur Burke, Concord.

LILIAN S. EDWARDS PRIZE.

Goldie Basch, Ashuelot.

CHI OMEGA PRIZE.

Phyllis Mary Blanchard, Epping.

VALENTINE SMITH SCHOLARSHIPS.

Frances Dorotha Hatch, '17, Exeter.
Martha Luena Hoitt, '18, Durham.
Gladys Hoagland, '19, Durham.
John Bloomfield, '20, Dover.

ROSTER OF REGIMENT.

For 1916–1917.

COMMANDANT.

CAPTAIN S. J. SUTHERLAND, United States Infantry.

CADET OFFICERS AND NON-COMMISSIONED OFFICERS FIELD AND STAFF.

Lieutenant-Colonel R. T. ROBERTS, *Commanding Regiment.*
Captain G. D. PARNELL, *Adjutant.*
Captain E. S. JOHNSON, *Quartermaster.*
Captain L. A. BOUTWELL, *Range Officer.*

FIRST BATTALION.

Major W. P. KNOX, *Commanding Battalion.*
First Lieutenant H. A. RUSSELL, *Adjutant.*
Second Lieutenant A. N. GRAHAM, *Quartermaster.*

BAND.

First Lieutenant E. S. ROSS.

COMPANY A.

Captain K. C. WESTOVER, *Commanding Company.*
First Lieutenant A. B. WHITTEMORE.
Second Lieutenant P. B. PLACE.

COMPANY B.

Captain V. W. BATCHELOR, *Commanding Company.*
First Lieutenant R. D. BRACKETT.
Second Lieutenant R. J. EWART.

COMPANY C.

Captain R. C. WIGGIN, *Commanding Company.*
First Lieutenant E. N. SANDERS.
Second Lieutenant R. H. SAWYER.

SECOND BATTALION.

Major W. H. Thomas, *Commanding Battalion.*
First Lieutenant J. D. Colomy, *Adjutant.*
Second Lieutenant C. A. Bennett, *Quartermaster.*

COMPANY D.

Captain C. B. Tibbetts, *Commanding Company.*
First Lieutenant P. B. Badger.
Second Lieutenant H. C. Atkins.

COMPANY E.

Captain S. W. Wentworth, *Commanding Company.*
First Lieutenant M. B. Lane.
Second Lieutenant H. C. Fogg.

COMPANY F.

Captain C. C. Bond, *Commanding Company.*
First Lieutenant, R. L. Dame.
Second Lieutenant R. P. Nevers.

SIGNAL PLATOON.

First Lieutenant R. L. Nelson.

STUDENTS, 1915–1916.

The number of hours toward graduation which each student has credited to him on the records in the Registrar's Office is given. The "course" shows the department in which the student registered for the second semester of this year, and under "P. O. Address," his residence at time of registration last fall.

The abbreviations indicating the course stand for the following departments:

a. h. and *d.*—Animal Husbandry and Dairy; *for.*—Forestry; *hort.*—Horticultural; *gen. a.*—General Agricultural; *agi.*—Freshmen and Sophomores in Agriculture; *ch. e.*—Chemical Engineering; *m. e.*—Mechanical Engineering; *e. e.*—Electrical Engineering; *a.* and *s.*—General Arts and Science; *h. e.*—Home Economics; *m. a. t.*—Mechanic Arts.

GRADUATES.

Name.	Course.	P. O. Address.
Gamash, Albert William,	*a.* and *s.*	*Manchester.*
Grant, Arnold Jay,	*ch. e.*	*North Berwick, Me.*
Livingston, Arabella Schermerhorn,	*a.* and *s.*	*Ballston Lake, N. Y.*
Scherrer, John B.,	*agi.*	*Durham.*
Smith, Todd Orin,	*agi.*	*Carrollton, Ohio.*
Young, Harry P.,	*a.* and *s.*	*Durham.*

SENIORS.

Name.	Hours' Credit.	Course.	P. O. Address.
Anderton, Thomas Richard,	123	*e. e.*	*Dover.*
Archibald, Clyde Warren,	149	*e. e.*	*Portsmouth.*
Basch, Goldie,	124	*a.* and *s.*	*Ashuelot.*
Batchelor, Vance Whiting,	122	*a.* and *s.*	*Durham.*
Bennett, Frank Powers,	128	*ch. e.*	*Northwood.*
Bissell, Ralph Howard,	133½	*a.* and *s.*	*Keene.*
Blanchard, Phyllis Mary,	123	*a.* and *s.*	*Epping.*
Bond, Charles Chester,	115	*a.* and *s.*	*Lisbon.*
Brown, Gladys Alice,	115	*a.* and *s.*	*Franklin.*
Brown, Oscar Choate,	179½	*ch. e.*	*Lebanon.*
Burleigh, Arthur Samuel,	132	*e. e.*	*Ossipee.*
Burpee, Louise Elizabeth,	122	*h. e.*	*Manchester.*
Chase, Marion Olive,	121	*a.* and *s.*	*Seabrook.*
Clark, Malcolm Barrett,	104	*a.* and *s.*	*Bethlehem.*

Name.	Hours' Credit.	Course.	P. O. Address.
lby, Rachel Clarenda,	111	*h. e.*	*New Boston.*
lomy, James Daniel,	126	*for.*	*Durham.*
lley, Leon Weston,	123½	*m. a. t.*	*Dana, Mass.*
ouch, Leon Meader,	128½	*a.* and *s.*	*Durham.*
mmings, Charles,	120½	*hort.*	*Colebrook.*
cts, Elmer Frank,	134	*e. e.*	*Manchester.*
vis, Leland Worthen,	146½	*e. e.*	*Concord.*
dley, William Allen,	132	*e. e.*	*Colebrook.*
stin, Clifton Henry,	129	*m. a. t.*	*Rochester.*
er, Natalie Drew,	127	*a.* and *s.*	*Dover.*
ll, Beatrice Louise,	116	*a.* and *s.*	*Dover.*
rnald, Alice,	119	*h. e.*	*Dover.*
rnald, Isabel Jane,	119	*h. e.*	*Dover.*
ch, Frank Williams,	131	*a. h.* and *d.*	*Windsor, Vt.*
sbee, Joseph Elliot,	134	*e. e.*	*Portsmouth.*
lmore, Ralph Harold,	126	*m. a. t.*	*Concord.*
dden, Chester Willis,	132	*a. h.* and *d.*	*Alton Bay.*
aham, Roy Charles Lemach,	132	*a.* and *s.*	*Epping.*
iffin, Philip Joseph,	147	*a.* and *s.*	*Portsmouth.*
rdy, Verna Carola,	122	*a.* and *s.*	*Concord.*
rriman, Nathaniel Joy,	118	*a.* and *s.*	*Laconia.*
tch, Frances Dorotha,	127	*a.* and *s.*	*Exeter.*
yden, Philip Alden,	137	*a. h.* and *d.*	*Brookline.*
dgdon, Robert Edgar,	133	*e. e.*	*Rochester.*
yt, Willis Hadley,	133	*a. h.* and *d.*	*Newington.*
ssey, Ruth Janet,	111	*a.* and *s.*	*Rochester.*
kins, Harvey Foss,	131	*gen. a.*	*Manchester.*
nson, Ellsworth Sheldon,	129	*hort.*	*Springfield, Vt.*
nson, Myrtle May,	117	*a.* and *s.*	*Reeds Ferry.*
ox, Warren Penn,	124	*a. h.* and *d.*	*Dover.*
ke, Leroy Moses,	135	*a. h.* and *d.*	*Brentwood.*
mbert, Eleanor Hurst,	124	*a.* and *s.*	*Kittery Point, Me.*
ngley, Mary Anthony,	114	*h. e.*	*Durham.*
tle, Harold Benjamin,	134	*hort.*	*Colbrook.*
mbard, Carl Weston,	126	*m. a. t.*	*Newburyport, Mass.*
ng, Edward,	123	*for.*	*Dover.*
rd, Eugene Hodgdon,	122	*m. a. t.*	*Hopkinton.*
serve, Harlan Ray,	121	*a.* and *s.*	*Rochester.*
lson, Rufus Lawrence,	125	*e. e.*	*Tilton.*
chols, Earl Brazil,	135	*a. h.* and *d.*	*Newton.*
xon, Leonard Russell,	133	*a. h.* and *d.*	*Exeter.*
dd, Henrietta Carleton,	124	*h. e.*	*Hampton.*
rker, Ralph Harthan,	135½	*a.* and *s.*	*Kingston.*

Name.	Hours' Credit.	Course.	P. O. Address.
Parnell, George Downes,	128	*e. e.*	*Manchester.*
Philbrick, Leonard Parker,	132½	*a.* and *s.*	*No. Hampton.*
Reed, Beatrice,	118	*h. e.*	*Claremont.*
Roberts, Julia Aurelia,	119	*h. e.*	*Toledo, Ohio.*
Roberts, Ray Towle,	130	*e. e.*	*West Concord.*
Robinson, Nathaniel Edwin,	128	*m. a. t.*	*Concord.*
Rollins, John Hooper,	127	*ch. e.*	*Dover.*
Ross, Edgar Samuel,	124	*ch. e.*	*Nashua.*
Russell, Hansel Arthur,	137	*a.* and *s.*	*Lebanon.*
Scruton, Herbert Ambrose,	141½	*a.* and *s.*	*Dover.*
Shannon, Clarice Henrietta,	123	*h. e.*	*Laconia.*
Steuerwald, Alberta Neal,	124	*h. e.*	*Dover.*
Stevens, Clark Leavitt,	137	*for.*	*Colebrook.*
Sussman, Joseph Abraham,	126	*a.* and *s.*	*Portsmouth.*
Swain, Howard Eugene,	150½	*m. e.*	*Exeter.*
Thomas, William Hervey,	136	*a. h.* and *d.*	*Durham.*
Tibbetts, Carleton Briggs,	109	*ch. e.*	*Somersworth.*
Tilton, Helen Florence,	117	*a.* and *s.*	*Auburn.*
Turcotte, Abby Jewett,	120	*h. e.*	*Lakeport.*
Wagner, Edgar Richard,	130	*ch. e.*	*Manchester.*
Wentworth, Sidney Warren,	125	*hort.*	*Hollis.*
Weston, Fred Webster,	118	*a.* and *s.*	*Lisbon.*
Weston, Helen Brown,	124	*h. e.*	*Lisbon.*
Westover, Kyle Chester,	131	*hort.*	*Manchester.*
Whittemore, Arthur Benjamin,	120	*a.* and *s.*	*Colebrook.*
Wiggin, Edwin Albert,	123	*m. a. t.*	*Exeter.*
Wiggin, Rohl Chase,	119	*a.* and *s.*	*Concord.*
Worcester, Mary Abbie,	121	*h. e.*	*Berwick, Me.*

JUNIORS.

Allen, Willard Increase, Jr.,	90	*a.* and *s.*	*Dover.*
Atkins, Harry Clifton,	95	*ch. e.*	*Franklin.*
Austin, Charles Oakley,	96	*gen. a.*	*Laconia.*
Bachelder, Henry Putney,	96	*a.* and *s.*	*East Andover.*
Badger, Phillips Brooks,	101	*a. h.* and *d.*	*Portsmouth.*
Baker, John Arthur,	93	*ch. e.*	*Claremont.*
Bartlett, Richard Cilley,	93	*e. e.*	*Derry Village.*
Batchelder, Philip,	86	*a.* and *s.*	*Durham.*
Bell, Ernest Lorne, Jr.,	77	*a.* and *s.*	*Plymouth.*
Bennett, Charles Alfred,	93	*a.* and *s.*	*Wakefield.*
Benson, Maurice Haynes,	86	*a. h.* and *d.*	*Lebanon.*
Blatchford, George Nason,	88	*a.* and *s.*	*Hampton Falls.*

Name.	Hours' Credit.	Course.	P. O. Address.
Boutwell, Leroy Arthur,	115	*m. e.*	*Concord.*
Brackett, Ralph deRochemont,	94	*hort.*	*Greenland.*
Bragdon, Doris Lillian,	90	*h. e.*	*Exeter.*
Brill, Milo Horace,	86	*a.* and *s.*	*Newport.*
Broderick, Charles Bernard,	96	*a. h.* and *d.*	*Exeter.*
Bugbee, Helen Marion,	78	*a.* and *s.*	*Claremont.*
Butterfield, Byron Goodwin,	95	*a. h.* and *d.*	*Antrim.*
Cahalane, Reginald Foster,	86	*a.* and *s.*	*Walpole.*
Came, Carleton Lord,	87	*ch. e.*	*Somersworth.*
Caswell, Henry Benson,	102	*m. a. t.*	*Barnstead.*
Clarke, Hugh Trescott,	78	*a.* and *s.*	*Canaan.*
Coburn, Charles Higgins,	97	*hort.*	*Tyngsborough, Mass.*
Coburn, Rodney Clyde,	96	*ch. e.*	*Lowell, Mass.*
Cushing, Mary Olive,	86	*h. e.*	*Concord.*
Dalton, Stanley Hatch,	93	*gen. a.*	*Nashua.*
Densmore, John Francis,	86	*a.* and *s.*	*Hanover.*
Dodge, James William,	87	*e. e.*	*Contoocook.*
Dreller, Louis,	95	*e. e.*	*Portsmouth.*
Durgin, Charles Butterworth,	95	*c. e.*	*Wilton.*
Durgin, John Frank,	86	*gen. a.*	*Newmarket.*
Eastman, Eva Emma,	91	*a.* and *s.*	*Concord.*
Flynn, Mildred Margaretta,	89	*a.* and *s.*	*Dover.*
Fogg, Heman Charles,	92	*ch. e.*	*Concord.*
Ford, Joseph Basil,	81	*a. h.* and *d.*	*Milford.*
Foss, Edith Emily,	86	*a.* and *s.*	*Dover.*
Furber, Josephine Marguerite	88	*h. e.*	*Laconia.*
Garland, Otis Raymond,	98	*gen. a.*	*Hampton.*
George, Maurice Channing,	94	*m. e.*	*Danville.*
Gilson, Marion Susan,	82	*a.* and *s.*	*Windham.*
Gove, Lucile Adeline,	81	*a.* and *s.*	*Durham.*
Graham, Alfred Newman,	91	*a.* and *s.*	*Henniker.*
Griswold, James Herbert,	91	*gen. a.*	*Durham.*
Hadley, Ruth Whitney,	88	*h. e.*	*Atkinson.*
Hardy, Ernest Winfield,	89	*gen. a.*	*Contoocook.*
Harris, Florence Julia,	88	*h. e.*	*Laconia.*
Hewey, Hilbert Goodrich, Jr.,	89	*a.* and *s.*	*Lewiston, Me.*
Hoitt, Martha Luena,	90	*h. e.*	*Durham.*
Howe, Fred John,	80	*a.* and *s.*	*Exeter.*
Howe, George Merrill,	79	*a.* and *s.*	*Contoocook.*
Humiston, John Edwin,	97	*a. h.* and *d.*	*Hanover Center.*
Huse, Irene Meyers,	89	*a.* and *s.*	*Laconia.*
Hutchinson, Perne Rawson,	104	*for.*	*Berlin.*
Hutchinson, Raymond Walch,	96	*gen. a.*	*Reed's Ferry.*

Name.	Hours' Credit.	Course.	P. O. Address.
Hyde, Lincoln Spencer,	89	*a. h.* and *d.*	*East Kingston.*
Ingerson, Della May,	87	*h. e.*	*Starrking.*
Irvine, Howard Thompson,	97	*a. h.* and *d.*	*Exeter.*
Jeffers, Weston Harvey,	102	*a. h.* and *d.*	*Pike.*
Jenkins, Rodney Solon,	93	*a. h.* and *d.*	*Barnstead.*
Jones, Russell Cyprian	91	*a.* and *s.*	*Exeter.*
King, Elsie Louise,	89	*h. e.*	*Dover.*
Lane, Merton Burgess,	86	*ch. e.*	*Ashburnham, Mass.*
Lary, Erma Masso,	85	*a.* and *s.*	*Portland, Me.*
Lynde, Leslie Eugene,	93	*e. e.*	*Dover.*
McConachie, Max,	92	*e. e.*	*Manchester.*
Martin, Giles,	80	*a.* and *s.*	*Manchester.*
Merrill, Lester Edwin,	85	*hort.*	*Lebanon.*
Merrill, Marguerite Mae,	81	*a.* and *s.*	*Nashua.*
Miltimore, John Everett,	88	*gen. a.*	*Derry.*
Morrill, Joseph Warren,	92	*hort.*	*Grafton.*
Morrill, Raymond Soule,	100	*a.* and *s.*	*Warren.*
Nevers, Ralph Poor,	79	*a.* and *s.*	*Salem, Mass.*
O'Brien, William Henry,	90	*e. e.*	*Boston, Mass.*
Ordway, Frederick Ira, Jr.,	79	*a.* and *s.*	*Manchester.*
Parsons, John Joseph,	91	*a.* and *s.*	*Somersworth.*
Perley, Sidney Harold,	83	*a. h.* and *d.*	*Durham.*
Richardson, Clesson Willard,	81	*a.* and *s.*	*Marlborough.*
Sanders, Elmer Nason,	94	*ch. e.*	*Durham.*
Sawyer, Lester Little,	85	*a.* and *s.*	*Durham.*
Sawyer, Robert Hamilton,	99	*a. h.* and *d.*	*Bradford, Mass.*
Scott, Susie Helen,	56	*a.* and *s.*	*Durham.*
Scovell, Earl Louis,	94	*for.*	*Haverhill, Mass.*
Sleeper, Clarence Wilson,	89	*a.* and *s.*	*Concord.*
Spencer, Archie McQuesten,	93	*m. e.*	*Plymouth.*
Stearns, Sam Loring,	98	*a. h.* and *d.*	*Manchester.*
Stimson, Robert Chapman,	91	*ch. e.*	*New London.*
Swain, Lewis Churchill,	93	*for.*	*Exeter.*
Wadleigh, Clarence Benjamin,	98	*gen. a.*	*Newton Junction.*
Walker, Ethel May,	88	*h. e.*	*Concord.*
Waterman, Clarence Stanley,	100½	*hort.*	*Durham.*
Wentworth, Rollins,	94	*e. e.*	*Dover.*
Whippen, Norman Francis,	95	*a. h.* and *d.*	*Kingston.*
Willand, Howard,	100	*hort.*	*East Wolfeboro.*
Winn, Hazel Searle,	85	*a.* and *s.*	*Dover.*
Young, Claiborne Hart,	97	*hort.*	*Wilton.*
Young, Priscilla Bertha,		*h. e.*	*Exeter.*

SOPHOMORES.

Name.	Hours' Credit.	Course.	P. O. Address.
dams, Albert Warner,	49	*a.* and *s.*	*Alton.*
dams, Eloi Augustus,	78½	*agi.*	*Wellesley, Mass.*
shford, Olive Irene,	44	*h. e.*	*Antrim.*
twood, Grace Etta,	48	*a.* and *s.*	*Worcester, Mass.*
aker, Margaret Edna,	53	*h. e.*	*Littleton.*
arker, Forrest Allen,	52	*ch. e.*	*Nashua.*
artlett, Edward Emery,	48	*e. e.*	*Derry.*
elyea, Clement Chipman,	50	*ch. e.*	*Newfields.*
enson, Priscilla,	44	*h. e.*	*Lebanon.*
lodgett, Frank Hoben,	38	*ch. e.*	*Concord.*
oomer, Stephen Henry,	56	*agi.*	*Cumberland Mills, Me.*
rosnan, John Andrew,	52	*agi.*	*Thorndike, Mass.*
rown, Charles Edward,	45	*a.* and *s.*	*Dover.*
allender, Benjamin Richard,	51	*ch. e.*	*Bethlehem.*
ann, Frederick Bowman,	76	*e. e.*	*Jaffrey.*
arr, James Irvin,	53	*ch. e.*	*Hancock.*
enter, Mary Elizabeth,	55	*h. e.*	*Hudson.*
hamberlin, Muriel,	47	*a.* and *s.*	*Berlin.*
lapp, Arthur Everett,	46	*a.* and *s.*	*Portsmouth.*
ochrane, Thomas Joseph,	56	*ch. e.*	*Ludlow, Mass.*
olby, Oliver Messer,	38	*m. a. t.*	*Lakeport.*
ressey, Mary Robinson,	50	*a.* and *s.*	*Dover.*
ullinan, John Francis,	55	*ch. e.*	*Portsmouth.*
ame, Ralph Leighton,	69	*a.* and *s.*	*Newport.*
avis, Otto Winifred,	56	*agi.*	*Concord.*
imond, Blanche Farnum,	53	*h. e.*	*Concord.*
oherty, Mildred Eva,	46	*h. e.*	*Derry.*
udley, Dorris,	29	*a.* and *s.*	*Reed's Ferry.*
ustin, Cecil Calvert,	58	*agi.*	*Rochester.*
astman, Harold Lowell,	34½	*a.* and *s.*	*Concord.*
dwards, Laurene Mary,	36	*a.* and *s.*	*Franklin.*
mery, Henry Alfred,	46	*e. e.*	*Auburn.*
wart, Raymond James,	55	*agi,*	*Lawrence, Mass.*
oster, Mabel Lydia,	51	*h. e.*	*Claremont.*
uller, Fred Bennell,	51	*a.* and *s.*	*Jefferson.*
ale, Joseph Morrill,	48	*agi.*	*Concord.*
arland, Oscar Leavitt,	45	*m. a. t.*	*Hampton.*
lidden, Norman Frank,	53	*agi.*	*Alton Bay.*
oss, Louis Stillman,	38	*a.* and *s.*	*Lakeport.*
raham, Clifford Loyd,	31	*agi.*	*Epping.*
ray, Walter Benson,	49	*e. e.*	*Rochester.*

Name.	Hours' Credit.	Course.	P. O. Address.
Greenfield, Sara Ella,	44	*a.* and *s.*	*Rochester.*
Hale, Dorothy Adeline,	52	*a.* and *s.*	*Dover.*
Hall, Fred William,	80	*agi.*	*Center Strafford.*
Hall, Irene Marguerite,	41	*a.* and *s.*	*Rochester.*
Hanson, Dorothy,	50	*a.* and *s.*	*Franklin.*
Harvell, Ralph Burbank,	43	*agi.*	*Laconia.*
Haseltine, Franklin Lowell,	78	*agi.*	*Reed's Ferry.*
Hilliard, William Russell,	53	*agi.*	*East Kingston.*
Hoagland, Gladys,	59	*a.* and *s.*	*Durham.*
Hoffman, Louis Benjamin,	53	*e. e.*	*Manchester.*
Horne, Chester Arthur,	48	*a.* and *s.*	*Rochester.*
Howard, Maurice Wilbur,	53	*a.* and *s.*	*Lebanon.*
Hunt, Cyril Thomas,	56	*ch. e.*	*Cornish Flat.*
Hunting, Ronald Walter,	65	*m. e.*	*Newport.*
Johnson, Maurice Harold,	41	*a.* and *s.*	*Manchester.*
Joy, Frank Adin,	56	*m. e.*	*Newfields.*
Kelleher, Mary Ethel,	51	*a.* and *s.*	*Dover.*
Kemp, Alice Bowdoin,	54	*h. e.*	*Kingston.*
Langley, Ada Caroline,	49	*a.* and *s.*	*Durham.*
Lewis, Marion Anna,	53	*h. e.*	*Littleton.*
Libby, Donald Whitney,	72	*agi.*	*Baldwinsville, Mass.*
Lovejoy, Ralph Locke,	54	*agi.*	*Nashua.*
McCarty, Mary Elizabeth,	51	*a.* and *s.*	*Dover.*
McKenney, Alfred Edwin,	56	*m. a. t.*	*Westbrook, Me.*
Matthes, Carl Frederick,	57	*ch. e.*	*Lawrence, Mass.*
Meader, Raymond Brackett,	54	*e. e.*	*Rochester.*
Moody, Alden Howard,	55	*ch. e.*	*Concord.*
Morrison, Lewis Willard,	51	*agi.*	*Berlin.*
Nightingale, Gordon Thayer,	57	*agi.*	*Moosup, Conn.*
Norrebard, Hans Jacob,		*e. e.*	*Christiania, Norway.*
Nudd, Willard Eugene,	56	*m. e.*	*Hampton.*
Osborne, Carver Haines,	73	*a.* and *s.*	*West Dennis, Mass.*
Owen, Wilfred Lester,	56	*ch. e.*	*Colebrook.*
Page, Oral Allen,	57	*agi.*	*Newton.*
Palmer, William Robert,	65	*e. e.*	*Berlin.*
Paul, Leslie Mathews,	39	*a.* and *s.*	*Dover.*
Perkins, Caroline May,	51	*a.* and *s.*	*Claremont.*
Perron, Herbert Vincent,	49	*e. e.*	*Goffs Falls.*
Pinkham, Madeline Lona,	54	*h. e.*	*Dover.*
Place, Palmer Bruce,	57	*ch. e.*	*Newmarket.*
Poland, Mary Flora,	46	*a.* and *s.*	*Lebanon.*
Prescott, Frank Williams,	51	*a.* and *s.*	*Pittsfield.*
Randall, Christine Flora,	53	*a.* and *s.*	*Campton.*

Name.	Hours' Credit.	Course.	P. O. Address.
Reardon, John Joseph,	50	*m. a. t.*	*Concord.*
Revene, Marcus Royal,	46	*a.* and *s.*	*Wheelwright, Mass.*
Rice, Lee Laughna,	54½	*a.* and *s.*	*Durham.*
Richmond, Louise Mary,	53	*a.* and *s.*	*Dover.*
Robb, Bernice Aurilla,	54	*h. e.*	*Durham.*
Rowe, Gilman Shaw,	35	*agi.*	*Exeter.*
Rumrill, Hamilton,	55	*m. a. t.*	*Hillsborough.*
Sanders, Miriam Augusta,	53	*h. e.*	*Rochester.*
Seawards, Susie Ethel,	53	*h. e.*	*Dover.*
Shedd, Hazelle Maud,	54	*h. e.*	*Rochester.*
Shillaber, John James,	53	*m. e.*	*Portsmouth.*
Shirley, Ralph Wellington,	56	*agi.*	*Fryeburg, Me.*
Shuttleworth, Melba Johnson,	54	*a.* and *s.*	*West Springfield, Mass.*
Shuttleworth, Wm. Edward,	56	*agi.*	*Portsmouth.*
Smith, Gertrude May,	52	*h. e.*	*Newfields.*
Smith, Howard Bruce,	47	*e. e.*	*Newport.*
Smith, Ivan Robinson,	37	*agi.*	*Hudson.*
Spencer, Franklin Hiram,	47	*e. e.*	*Cumberland Mills.*
Stafford, Henry Walton,	51	*e. e.*	*Berlin.*
Stafford, John Fremont,	55	*a.* and *s.*	*Berlin.*
Steeves, Lawrence Eugene,	55	*agi.*	*Strafford.*
Stevens, Ruth Lee,	53	*h. e.*	*Franconia.*
Strain, Murray Hartshorn,	47	*a.* and *s.*	*Groveton.*
Sutherland, Christine Jane,	50	*h. e.*	*Plymouth.*
Thompson, William Haven, Jr.,	50	*ch. e.*	*Atkinson.*
Tilton, Lewis Blake,	54	*agi.*	*East Kingston.*
Torrey, Prescott Hawes,	48	*agi.*	*Quincy, Mass.*
Trubey, Cyril Conrad,	57	*agi.*	*Dover.*
Wakefield, Clement Arthur,	44	*a.* and *s.*	*Biddeford, Me.*
Wetherbee, Emma Louise,	45	*h. e.*	*Milford.*
Wheeler, William Crawford,	56	*agi.*	*Starrking.*
White, Alpheus Britton,	48	*a.* and *s.*	*Peterborough.*
Wiggin, Ida Marion,	53	*h. e.*	*Dover.*
Wildes, Karl Leland,	56	*e. e.*	*Belmont.*
Williams, Katherine,	54	*h. e.*	*Exeter.*
Wright, Rena,	45	*h. e.*	*Lebanon.*
Young, Roland Jesse,	46	*a.* and *s.*	*Berlin.*

FRESHMEN.

Abbott, Howard Stanley,	18	*agi.*	*Wilton.*
Akerman, Wallace Sheldon,	16	*ch. e.*	*Portsmouth.*
Aldrich, Katherine Spurlin,	14	*a.* and *s.*	*Whitefield.*
Aulis, Clifford Elwin,	15	*a.* and *s.*	*Hanover.*

Name.	Hours' Credit.	Course.	P. O. Address.
Babson, Howard Abbott,	6	*e. e.*	*Berlin.*
Bailey, George Rex,	16	*m. e.*	*West Newbury, Mass.*
Bailey, Mary,	19	*a.* and *s.*	*Durham.*
Banister, Rolfe George,	18	*agi.*	*Colebrook.*
Barton, Helen Miller,	18	*h. e.*	*Seabrook.*
Bell, Leslie Samuel,	6	*a.* and *s.*	*Plymouth.*
Bellows, Charles Byron,	9	*agi.*	*Groveton.*
Bennett, Frank Mooney,	1	*a.* and *s.*	*Alton.*
Bickford, Gladys Charlotte,	18	*h. e.*	*Gonic.*
Billingham, George Harold,	14	*m. a. t.*	*Boston.*
Binks, Doris Reba,	16	*a.* and *s.*	*Franklin.*
Blair, David James, Jr.,		*agi.*	*Pelham.*
Blood, David Wallace,	5	*a.* and *s.*	*Lancaster.*
Blood, Glenn Heyward,	9	*a.* and *s.*	*Hanover.*
Blood, Kenneth Darwin,	8	*agi.*	*Claremont.*
Bloomfield, John,	18	*ch. e.*	*Dover.*
Booma, Frank,	15	*a.* and *s.*	*Portsmouth.*
Booth, George Guy,	18	*a.* and *s.*	*Laconia.*
Boutwell, Harley,	18	*a.* and *s.*	*Concord.*
Brierley, Philip,	18	*a.* and *s.*	*Stratham.*
Brooks, Beatrice Azelia,	17	*a.* and *s.*	*Dover.*
Brooks, Frank Arthur,	18	*ch. e.*	*Manchester.*
Brown, Arthur Butler,	15	*agi.*	*Newmarket.*
Brown, Esther Lucile,	17	*a.* and *s.*	*Newfields.*
Browne, Winnifred Pearl,	16	*a.* and *s.*	*Manchester.*
Bryant, Rachael Leone,	18	*h. e.*	*Portsmouth.*
Burleigh, Lucile Edna,	8	*a.* and *s.*	*Franklin.*
Burpee, Howard Ainsworth,	18	*ch. e.*	*Manchester.*
Butler, Frank Herbert,	14	*agi.*	*New London.*
Calef, Leon Chesley,	6	*e. e.*	*East Barrington.*
Carleton, Alden Lee,	11	*a.* and *s.*	*Goffstown.*
Chadwick, Marion Elizabeth,	18	*a.* and *s.*	*Boscawen.*
Chamberlain, Abiel Herbert,	18	*ch. e.*	*South Natick.*
Champaigne, Francis Michael,	2	*ch. e.*	*Keene.*
Chase, Ned Hamilton,	16	*m. a. t.*	*Hampton Falls.*
Cheney, Hayden Ezra,	2	*agi.*	*Newton Junction.*
Cheney, Walter Fremont,	14	*a.* and *s.*	*Pembroke.*
Christensen, Ernest Waldemar,	18	*agi.*	*Gloucester, Mass.*
Clarke, Daniel Willatowski,	15	*agi.*	*Schenectady, N. Y.*
Clay, Ansel Robie,	19	*a.* and *s.*	*East Andover.*
Clay, Norris Maitland,	18	*ch. e.*	*Watertown, Mass.*
Cole, Paul Cutting,	15	*agi.*	*Hillsboro Upper Village*
Congdon, Neal Harrison,	14	*a.* and *s.*	*Lancaster.*

Name.	Hours' Credit.	Course.	P. O. Address.
Conner, Solon Dolloff,	12	*m. e.*	*Exeter.*
Cote, Margaret Sullivan,	17	*a.* and *s.*	*Nashua.*
Creasey, Norman Stewart,	18	*e. e.*	*Pittsfield.*
Cree, Leighton Joseph,	12	*agi.*	*Colebrook.*
Cross, Leon Forrest,	14	*a.* and *s.*	*Tilton.*
Cummings, Flora Belle,	18	*h. e.*	*Colebrook.*
Currier, Laurence Otis,	15	*a.* and *s.*	*Portsmouth.*
Currier, Leslie Charles,	18	*e. e.*	*North Conway.*
Currier, Maurice Emerson,	14	*a.* and *s.*	*Dover.*
*Cushing, Edwin Leon,	18	*ch. e.*	*Meredith.*
Davis, Arthur Franklin,	11	*a.* and *s.*	*Portsmouth.*
Davis, Mark Loyne,		*a.* and *s.*	*Warren.*
Dearborn, Hazel Ruth,	17	*a.* and *s.*	*Durham.*
Dearborn, Thomas Arnold,	10	*a.* and *s.*	*Dover.*
Dodge, Howarth Jacques,		*m. e.*	*Dover.*
Donohoe, Helen Bernadine,	18	*a.* and *s.*	*Waltham, Mass.*
Donovan, John Cyril,	7	*a.* and *s.*	*Groveton.*
Dunn, Ralph Champlin,	18	*agi.*	*Mattapoisett, Mass.*
Edgerley, Evangeline Hester,	19	*a.* and *s.*	*Newmarket.*
Elkins, Dorice White,	18	*h. e.*	*Hampton Falls.*
Emery, Frederic Hanscom,	18	*ch. e.*	*East Rochester.*
Emery, Ralph Benton,	51½	*agi.*	*Melrose, Mass.*
Erskine, Guy Harvey,	16	*e. e.*	*Manchester.*
Ewer, Everett Donald,	30	*a.* and *s.*	*Dover.*
Farnham, Roger Eugene,	24	*agi.*	*Somerville, Mass.*
Farnum, Everett Hollis,	8	*a.* and *s.*	*Suncook.*
Felker, Harold Perkins,	8	*agi.*	*Meredith.*
Fenderson, Kendrick Elwell,	40	*a.* and *s.*	*Dover.*
Field, Richard Francis,	5	*a.* and *s.*	*Nashua.*
Fitch, Harold Wakefield,	18	*a.* and *s.*	*Claremont.*
Fitts, Perley Irving,	17	*agi.*	*Etna.*
Flanders, David James,	18	*ch. e.*	*Manchester.*
Foss, Philip Watson,	4	*m. e.*	*Dover.*
Foster, Russell Chase,	16	*m. e.*	*Arlington, Mass.*
Fowler, William Donald,	13	*agi.*	*Durham.*
Fox, Gordon Lloyd,	18	*a.* and *s.*	*Lisbon.*
Friel, Michael James,	13	*a.* and *s.*	*Walton.*
Gardner, Celia Hubbard,	17	*h. e.*	*New London.*
Gardner, Eleanor Rebecca,	17	*a.* and *s.*	*Hillsboro.*
Garry, George,		*agi.*	*Nashua.*
Gaw, Harold Edmund,	18	*e. e.*	*Manchester.*
Glidden, Adelaide Erdene,		*a.* and *s.*	*Epping.*

* Deceased. Jan. 31, 1917

Name.	Hours' Credit.	Course.	P. O. Address.
Golding, Norman Randall,	23	*agi.*	*Biddeford, Me.*
Gonya, John Edmund,	12	*a.* and *s.*	*Berlin.*
Gove, Norris Dickinson,	18	*m. e.*	*Raymond.*
Graham, Edward Dewey,	9	*a.* and *s.*	*Newington.*
Graney, William Francis,	15	*ch. e.*	*Keene.*
Green, Marjorie Linwood,	15	*a.* and *s.*	*Rochester.*
Greer, Raymond Chase,	7	*a.* and *s.*	*Grasmere.*
Haggerty, William Jennings,	15	*e. e.*	*Nashua.*
Hall, Alfred,	14	*agi.*	*Edgartown, Mass.*
Ham, Harold Rudman,	12	*agi.*	*Dover.*
Hanson, Chester Pearl,	17	*a.* and *s.*	*Alton.*
Harling, Harry Jonathan,	18	*agi.*	*Jaffrey.*
Harris, Arthur Eugene,	18	*ch. e.*	*Concord.*
Harris, Carl Winifred,	21	*ch. e.*	*Worcester, Mass.*
Hartwell, Robert William,	5	*agi.*	*Littleton, Mass.*
Hatch, Horace McNeill,	38	*agi.*	*Lebanon.*
Hatch, Wallace Everett,	15	*a.* and *s.*	*Kennebunk, Me.*
Hayes, Allen Nowell,		*m. e.*	*Dover.*
Hayes, Ethelle Meserve,	18	*h. e.*	*Dover.*
Herlihy, Abby Katherine,	13	*a.* and *s.*	*Derry Village.*
Hervey, Albert Charles,	7	*a.* and *s.*	*Newfields.*
Hicks, Albert Ernest,	15	*e. e.*	*Dover.*
Hill, Benjamin Franklin,	18	*ch. e.*	*Somersworth.*
Hill, William Rodney,	18	*agi.*	*Concord.*
Hobbs, Ethel Mae,	17	*a.* and *s.*	*Somersworth.*
Hodgdon, Edith Mildred,	17	*a.* and *s.*	*Rochester.*
Holden, Ellen Grace,	18	*a.* and *s.*	*Colebrook.*
Howard, Hubbard Everett,	12	*agi.*	*Pike.*
Hoyt, John Barton,	15	*m. e.*	*Laconia.*
Huse, Walter Daniel,	16	*m. e.*	*Laconia.*
Hutchins, Roger Dennett,	18	*e. e.*	*Northwood Ridge.*
Jenness, Judith Varney,	17	*a.* and *s.*	*Dover.*
Jenness, Leslie George,	18	*ch. e.*	*South Danbury.*
Jones, Leon Charles,	38½	*agi.*	*Durham.*
Jones, Lucie Jeannette,	18	*h. e.*	*Milton.*
Joy, Grace Mae,	16	*a.* and *s.*	*Newmarket.*
Junkins, Frank Leroy,	9	*m. a. t.*	*Exeter.*
Kelley, Florence Aura,	18	*h. e.*	*Plaistow.*
Kendall, Edmund Miller,	8	*a.* and *s.*	*Manchester.*
Kenyon, Franklin Perry LaDieu,		*e. e.*	*Greenwood, Mass.*
Kimball, Richard Henry,	43½	*agi.*	*Manchester.*
Kling, Frances,	14	*a.* and *s.*	*Concord.*
Ladd, Frank Watson,	18	*e. e.*	*Contoocook.*

Name.	Hours' Credit.	Course.	P. O. Address.
dd, Harold Marden,	18	*ch. e.*	*Bristol.*
ne, Chester Linward,	18	*ch. e.*	*Concord.*
flamme, Frank Xavier,	12	*a.* and *s.*	*Manchester.*
Montagne, Ovide Romeo,	6	*m. e.*	*Rochester.*
ngley, Marland George,	12	*a.* and *s.*	*Durham.*
ngley, Mildred Mae,	16	*a.* and *s.*	*Durham.*
avitt, Ernest Lester,	5	*ch. e.*	*Newport.*
avitt, Harold Irving,	18	*agi.*	*Lowell, Mass.*
wis, Clayton William,	23	*a.* and *s.*	*Lebanon.*
wis, Miriam,	17	*a.* and *s.*	*Chester.*
ch, Richard Corning,	18	*e. e.*	*Exeter.*
ugee, Arlo Roy,	18	*m. e.*	*Laconia.*
vejoy, Theodore Russell,	11	*e. e.*	*Conway.*
we, Carroll Henry,	18	*a.* and *s.*	*Alton.*
acDonald, Ray Archibald,	18	*e. e.*	*Manchester.*
anter, Ralph M.,	23	*a.* and *s.*	*Manchester.*
arsh, Murray Bryan,	13	*a.* and *s.*	*Canaan, Vt.*
cGinn, John Thomas,	18	*agi.*	*Rochester.*
cIntyre, Sidnie Margaret,	18	*h. e.*	*Manchester.*
cNall, Charles Ivan,	14	*a.* and *s.*	*Malden, Mass.*
cQuesten, Ruth Carolyn,	18	*h. e.*	*Manchester.*
eader, Carleton Eugene,		*m. e.*	*Rochester.*
elville, George Donald,	18	*a.* and *s.*	*Hyde Park, Mass.*
eras, Norman Eugene,	18	*e. e.*	*Exeter.*
errill, David Lee,	18	*e. e.*	*Lakeport.*
eserve, Jessica Frances,	18	*h. e.*	*Dover.*
eserve, Winthrop Emerson,	28	*agi.*	*Durham.*
tchell, Basil Joseph,	15	*e. e.*	*Nashua.*
oore, Hazel Belle,	7	*a.* and *s.*	*Loudon.*
orrill, Clyde Rex,	15	*a.* and *s.*	*Dover.*
orrison, Cecil Allister,	16	*ch. e.*	*Rochester.*
orse, Howard Warren,		*e. e.*	*New London.*
oulton, Mary Elizabeth,		*a.* and *s.*	*Buckland, Mass.*
urphy, Helen Ann,	18	*ch. e.*	*Concord.*
lson, Daniel Horace,	15	*agi.*	*Franconia.*
wbold, Douglas Rudkin,		*ch. e.*	*Concord.*
wman, Derwood Austin,	18	*ch. e.*	*Lancaster.*
rris, Edith Priscilla,	20	*h. e.*	*East Derry.*
Leary, Christopher James, Jr.,	16	*a.* and *s.*	*Newfields.*
Neil, Robert Emmett,		*m. a. t.*	*Nashua.*
borne, Charles Roland,	36	*a.* and *s.*	*Pittsfield.*
s, Rena Frances,	10	*a.* and *s.*	*Rochester.*
terson, Frank Edward,	11	*a.* and *s.*	*Portsmouth.*

Name.	Hours' Credit.	Course.	P. O. Address.
Patten, Gordon Willis,	15	*a.* and *s.*	*Manchester.*
Paul, Samuel H.,	18	*m. e.*	*Wakefield.*
Pelton, Winslow Lyle,	32	*a.* and *s.*	*Lancaster.*
Pentland, Roger,	8	*a.* and *s.*	*Nashua.*
Perkins, Charles Gladstone,	16	*m. e.*	*Portsmouth.*
Pichette, Edward Albert,	18	*ch. e.*	*Concord.*
Pierce, Walter Raymond,	16	*m. e.*	*West Springfield, M*
Pike, Otis William,	18	*m. e.*	*Antrim.*
Pingree, George Nathan,	18	*e. e.*	*New London.*
Plaisted, Guy Edgar,	18	*e. e.*	*Portsmouth.*
Plummer, Dwight Hall,	7	*a.* and *s.*	*Milton.*
Plummer, Ray,		*a.* and *s.*	*Milton.*
Prescott, Frank Dunning,	11	*e. e.*	*Franklin.*
Prescott, Mildred Perry,	18	*a.* and *s.*	*Auburn.*
Ramsay, Ira Allan, Jr.,	9	*agi.*	*Colebrook.*
Reed, John Ephraim,	15	*a.* and *s.*	*Concord.*
Reid, Walter Davis,	15	*e. e.*	*Berlin.*
Reynolds, Addie Louise,	13	*a.* and *s.*	*Rochester.*
Richardson, Charles Wesley,	12	*a.* and *s.*	*Barnstead.*
Rogers, Urban Charles,	18	*a.* and *s.*	*Berlin.*
Rogers, Walter Eugene,	36	*a.* and *s.*	*Sanbornville.*
Rumford, Clarence Henry,	15	*agi.*	*Newfields.*
Ryan, Eugene Lockwood,	6	*e. e.*	*Sound Beach, Conn.*
Salcedo, Salgar Hernando,	2	*agi.*	*Bogota, Columbia, S.*
Sawyer, Charles Gorham,	12	*a.* and *s.*	*Durham.*
Saxton, Marjorie May,	18	*a.* and *s.*	*Manchester.*
Scammon, Chester Allen,	18	*e. e.*	*Stratham.*
Sewall, Frank Albert,	22	*agi.*	*Newmarket.*
Shannon, Edwin Howe, Jr.,	16	*a.* and *s.*	*Laconia.*
Shannon, Jennie Mae,	17	*a.* and *s.*	*Epping.*
Sharpe, Abraham B.	8	*a.* and *s.*	*Nashua.*
Shum, Raymond Edward,	9	*m. a. t.*	*Dover.*
Sleeper, Frank Dewey,	13	*m. e.*	*Lakeport.*
Smart, Isabelle Ellen,		*h. e.*	*Durham.*
Smith, Arthur Deane,	15	*agi.*	*Andover.*
Smith, Carl Davis,	4	*agi.*	*Ashland.*
Smith, Deborah Beatrice,	18	*h. e.*	*Newfields.*
Smith, Edward Emerson,	18	*agi.*	*Mason.*
Snow, Frank Sherman,	6	*m. e.*	*Portsmouth.*
Soper, Otis Edmond,	29	*e. e.*	*W. Somerville, Mass*
Spinney, Willard Ellsworth,	18	*ch. e.*	*Concord.*
Sprague, Daniel Lawrence,	16	*e. e.*	*Haverhill, Mass.*
Steele, James Fiddes,	18	*a.* and *s.*	*Concord.*

Name.	Hours' Credit.	Course.	P. O. Address.
tevens, George Orson,	1	*agi.*	*Colebrook.*
tevens, George Ralsey,	20	*a.* and *s.*	*New Canaan.*
tewart, Elmer Wadsworth,	18	*a.* and *s.*	*Hanover.*
tott, George Phillip,	18	*ch. e.*	*Portsmouth.*
truthers, Francis William,	11	*a.* and *s.*	*Townsend, Mass.*
tryker, Phebe Key,	17	*a.* and *s.*	*George's Mills.*
ughrue, Esther,	15	*a.* and *s.*	*Nashua.*
ullivan, Marie Theresa,	7	*a.* and *s.*	*Dover.*
ultaire, Harriett Elizabeth,		*h. e.*	*Plaistow.*
umner, Larra Thornton,	5	*agi.*	*Canton, Mass.*
weetser, Harold Caswell,	12	*a.* and *s.*	*Portsmouth.*
wett, Leon Merrill,	12	*e. e.*	*Berwick, Me.*
apley, Roland William,		*ch. e.*	*Lewiston, Me.*
aylor, Warren Howard,	12	*a.* and *s.*	*Stamford, Conn.*
hayer, Guy Webster,	18	*ch. e.*	*Harrisville.*
homas, Michael Simon,	18	*e. e.*	*Durham.*
hompson, Elmer John,	15	*agi.*	*Contoocook.*
immons, Patrick Joseph,	12	*a.* and *s.*	*Portsmouth.*
okarski, Kazimierz Wladyslaus,	18	*agi.*	*Windsor Locks, Conn.*
waddle, Arthur Eastman,	16	*m. e.*	*Manchester.*
eazey, John William,	4	*a.* and *s.*	*Groveton.*
on Tobel, Julian Miller,	8	*a.* and *s.*	*Lebanon.*
ose, Milton Reynolds,	12	*a.* and *s.*	*Concord.*
allace, Grace Ireland,	18	*h. e.*	*Manchester.*
allace, Thomas Henry Joseph,	8	*a.* and *s.*	*Somersworth.*
allis, Ralph Joseph,	15	*ch. e.*	*Laconia.*
asgatt, Hazel Lillian,	18	*h. e.*	*Kittery, Me.*
entworth, Hazel Frances,		*a.* and *s.*	*Farmington.*
entworth, Russell Gerrish,	11	*a.* and *s.*	*Farmington.*
hipple, Gladys Louise,	12	*h. e.*	*Lebanon.*
hitman, Robert Charles,	30½	*agi.*	*Drewsville.*
ilkinson, Charles Henry,	18	*agi.*	*Murray, C. B., N. S.*
illard, Floyd Dean,		*a.* and *s.*	*Claremont.*
illiams, Charles Heartley,		*agi.*	*Exeter.*
illiams, Isaac Langley,	15	*ch. e.*	*Exeter.*
illiamson, Ernest Barrett,		*a.* and *a.*	*Brookline, Mass.*
irt, Williston,	15	*a.* and *s.*	*Wellesley Hills, Mass.*
right, Howard Holmes,	8	*m. a. t.*	*Strafford.*
oung, Mabel Culver,	15	*h. e.*	*Portsmouth.*
oung, Ralph Joy,	18	*agi.*	*Dover.*

SECOND YEAR TWO-YEAR MEN.

Name.	Hours' Credit.	Course.	P. O. Address.
Abbott, Roland Webster,	55	*agi.*	*Hudson.*
Ames, Roger Morrill,	59	*agi.*	*Lakeport.*
Brien, Armand Alfred,	55	*e. e.*	*Manchester.*
Cate, Eben Woodman,	59	*agi.*	*Laconia.*
Cofran, Dustin Charles,	54	*agi.*	*Manchester.*
Colcord, John Edward,	58	*agi.*	*Derry.*
Dearborn, Lelle Francis,	51	*e. e.*	*Epping.*
Doyle, Peter James, Jr.,	58	*agi.*	*Hampton Falls.*
Eastman, James,	56	*agi.*	*West Canaan.*
Ellis, Joseph Harvey,	61	*agi.*	*West Somerville, Ma*
Fellows, Weldon Harris,	52	*e. e.*	*Laconia.*
Forbush, Cyril Winthrop,	55	*agi.*	*Newton, Mass.*
Foss, Arthur Lester,	57	*agi.*	*Tilton.*
French, Leo Copp,	58	*agi.*	*Tilton.*
Gilson, Henry Earl,	57	*agi.*	*Windham.*
Hardy, Robert Harrison,	56	*e. e.*	*Somerville, Mass.*
Holbrook, Holman Arcsel,	51	*agi.*	*Colebrook.*
Johnson, Robert,	55	*e. e.*	*Manchester.*
Laugher, Horace Batava,	57	*agi.*	*Worcester, Mass.*
Leonard, George Wesley,	56	*agi.*	*Piermont.*
McIntyre, Grover Clifton,	57	*agi.*	*Dover.*
Merrill, Henry Hubert,	64	*agi.*	*Littleton.*
Merrill, Roger Moulton,	57	*agi.*	*Hampton Falls.*
Minot, George Cavis,	60	*agi.*	*Bath.*
Paine, Gardner Lloyd,	39	*e. e.*	*Berlin.*
Peterson, Albert,	62	*agi.*	*Raymond.*
Petmezas, Constentin,	58	*agi.*	*Portsmouth.*
Pettigrew, Herman Elroy,	44	*e. e.*	*Portsmouth.*
Potter, Francis Taylor,	52	*e. e.*	*Mountainview.*
Ries, Waldo,	51	*agi.*	*New York, N. Y.*
Roberts, Leon Lester,	54	*e. e.*	*Portsmouth.*
Rose, Herbert Adams,	52	*agi.*	*Andover, Mass.*
Rounds, Ward Barton,	61	*agi.*	*West Milan.*
Sanborn, Morrill Joseph,	54	*agi.*	*Rochester.*
Shaw, Herman Weare,	40	*agi.*	*Exeter.*
Smith, Dwight George,	62	*agi.*	*Nashua.*
Webster, Everett Woodman,	64	*agi.*	*Medford, Mass*
Williams, John Charles,	54	*agi.*	*Peterborough.*

FIRST TWO-YEAR MEN.

Name.	Hours' Credit.	Course.	P. O. Address.
len, Warren Harmon,	18	*e. e.*	*Waterville.*
ndrew, Edwin John,	45	*agi.*	*Concord.*
ll, James Norman,		*agi.*	*Berlin.*
nd, Henry William,		*agi.*	*Niantic, Conn.*
rcoran, Harold Joseph,	1	*agi.*	*Winthrop, Mass.*
avis, Homer Cleveland	18	*agi.*	*Colebrook.*
erby, Jarvis,	8	*agi.*	*Concord, Mass.*
oyle, Bartholomew Walter,	13	*agi.*	*Worcester, Mass.*
rake, Maurice Jonathan,		*agi.*	*Northwood Ridge.*
astman, Edward Lee, Jr.,	18	*e. e.*	*Kearsarge.*
irchild, Edward Thomson, Jr.,		*e. e.*	*Durham.*
aulkner, Lester Roy,	11	*e. e.*	*West Swanzey.*
elker, Louis Keith,	13	*agi.*	*Meredith.*
sher, Norman Albert,	4	*agi.*	*Rochester.*
anders, David James,		*agi.*	*Manchester.*
etcher, Herman Russell,	22	*agi.*	*Plymouth.*
ollansbee, Harry Mayoh	22	*agi.*	*Enfield.*
olsom, Shirley Frank,	10	*agi.*	*Boscawen.*
ardner, Richard Hosmer,	19	*agi.*	*Nashua.*
autro, Chester Leonard,	6	*agi.*	*Northwood Ridge.*
lanville, Trueworthy,	14	*agi.*	*Contoocook.*
annum, William Portor,	17	*e. e.*	*Ludlow, Mass.*
arper, Richard Shackley,	17	*e. e.*	*Biddeford, Me.*
arris, George Webster,	19	*agi.*	*Pelham.*
awkes, William Valentine,	16	*e. e.*	*Sound Beach, Conn.*
ill, Orton Francis,	19	*agi.*	*Warner.*
olt, Henry Cutter,	17	*e. e.*	*Epping.*
untley, Harold Ellwood,		*agi.*	*Manchester.*
ones, Eben Parker,	19	*agi.*	*Hillsboro Center.*
each, Sam Neal,		*agi.*	*Colebrook.*
artin, Horace Sawyer,	31	*agi.*	*Warner.*
cGrahaghan, Francis Philip,		*e. e.*	*Manchester.*
rentiss, Fred Robert,	32	*agi.*	*Alstead.*
uggles, Louis Orcutt,	22	*agi.*	*Furnace, Mass.*
ussell, William Arthur,	19	*agi.*	*Newtonville, Mass.*
anders, Robert Carl,	18	*agi.*	*Dover.*
choff, Ray Edwin,	19	*agi.*	*Pittsburg.*
malley, Maxwell William,	28	*agi.*	*Walpole.*
mith, Harold Boynton,	13	*m. e.*	*Manchester.*
hompson, Philip McGrath,	18	*e. e.*	*New Ipswich.*
olman, Gordon Francis,	9	*agi.*	*Chesham.*

Name.	Hours' Credit.	Course.	P. O. Address.
Trask, Edward Prankard,	12	*m. e.*	*Warner.*
Tyler, Lee Cartland,	17	*e. e.*	*Barrington.*
Uhrlaub, John Christopher, Jr.,		*e. e.*	*Stamford, Conn.*
Wagner, B. Lloyd,	19	*agi.*	*Waban, Mass.*
Weare, Joseph Albert,		*agi.*	*Ogunquit, Me.*
Weeks, Maitland Batchelder,	19	*agi.*	*Gilmanton.*
Whipple, Earl Cass,	22	*agi.*	*Goffstown.*

SPECIALS.

Boomer, Marjory Ramsdell,	31	*a.* and *s.*	*Dover.*
Fletcher, Alice,	13	*agi.*	*Concord.*
Gould, John Harold,		*agi.*	*Union.*
Park, Katherine L.,		*agi.*	*Warren.*
Taggart, Alice Maude,		*a.* and *s.*	*Peterborough.*
Watson, Wesley,	27	*eng.*	*Manchester.*
Weigel, Frederick Albert,	24	*eng.*	*Durham.*

DISTRIBUTION OF REGISTRATION, 1916–1917.

	Students	Population 1910 Census	Population per Student	Square Miles in County	Square Miles per Student	Per cent of Student Body from Each Section
Belknap	39	21,309	546	397	10	6.0
Carroll	10	16,316	1,631	955	95	1.5
Cheshire	14	30,659	2,187	728	52	2.1
Coös	43	30,753	715	1,798	42	6.5
Grafton	47	41,652	886	1,729	36	7.2
Hillsborough	88	126,072	1,432	895	10	13.2
Merrimack	71	53,335	751	932	13	10.5
Rockingham	123	52,188	424	691	6	18.6
Strafford	123	38,951	317	379	3	18.3
Sullivan	15	19,337	1,289	527	35	2.1
Massachusetts	57	.....	.....	.....	.....	8.6 } N. E. outside of N. H., 12.4%
Connecticut	8	.....	.....	.....	.....	1.1 }
Maine	16	.....	.....	.....	.....	2.2 }
Vermont	3	.....	.....	.....	.....	.5 }
Ohio	3	.....	.....	.....	.....	.5
New York	3	.....	.....	.....	.....	.5
Nova Scotia	1	.....	.....	.....	.....	.2
Norway	1	.....	.....	.....	.....	.2
South America	1	.....	.....	.....	.....	.2
	666					

Summary of Registration, 1916-1917.

Compared with Registration Figures for Previous Year.

	Agricultural.										Arts and Science.						Engineering.						Men.		Women.		Total.	
	Reg.		A.H.&D.		For.		Gen.		Hort.		Gen.		H.E.		M.A.T.		C.E.		E.E.		M.E.							
	'16 '17	'15 '16	'16 '17	'15 '16	'16 '17	'15 '16	'16 '17	'15 '16	'16 '17	'15 '16	'16 '17	'15 '16	'16 '17	'15 '16	'16 '17	'15 '16	'16 '17	'15 '16	'16 '17	'15 '16	'16 '17	'15 '16	'16 '17	'15 '16	'16 '17	'15 '16	'16 '17	'15 '16
Seniors	...	...	9	12	3	...	1	7	5	3	29	30	13	5	7	5	6	4	11	8	1	2	60	59	25	17	85	76
Juniors	...	...	14	9	3	4	9	4	7	4	34	27	10	14	1	8	9	6	7	13	3	1	76	64	21	26	97	90
Sophomores	27	40	...	...	...	...	...	...	...	...	38	32	21	12	5	3	13	13	13	11	4	3	82	93	39	21	121	114
Freshmen	48	32	...	...	...	...	...	...	...	...	108	52	20	25	6	4	29	15	28	22	19	12	203	117	55	45	258	162
Total 4-year Students	75	72	23	21	6	4	10	11	12	7	209	141	64	56	19	20	57	38	59	54	27	18	421	333	140	109	561	442
Total by Divisions	...	...	...	...	...	...	...	...	126	115	...	...	...	...	292	217	...	...	...	...	143	110	...	...	...	...	...	...
Graduates	3	2	...	...	...	...	...	...	...	...	2	2	...	...	...	...	1	1	...	...	...	...	5	4	1	1	6	5
2d Two-year	29	47	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	19	...	...	...	38	47	...	...	38	47
1st Two-year	34	71	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	12	30	2	9	48	110	...	...	48	110
Specials	3	4	...	...	...	...	...	...	...	...	2	6	...	...	...	1	...	2	2	1	...	...	3	11	4	3	7	14
Winter Short Courses	6	35	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	6	35	...	...	6	35
Totals	150	231	23	21	6	4	10	11	12	7	213	149	64	56	19	21	58	41	82	85	29	27	521	540	145	113	666	653
Totals by Divisions	...	...	...	...	...	...	...	...	201	274	...	...	...	...	296	226	...	...	...	...	169	153	...	...	...	...	...	...
One Week Course	290	325	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	290	325

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VOLUME IX NUMBER 1

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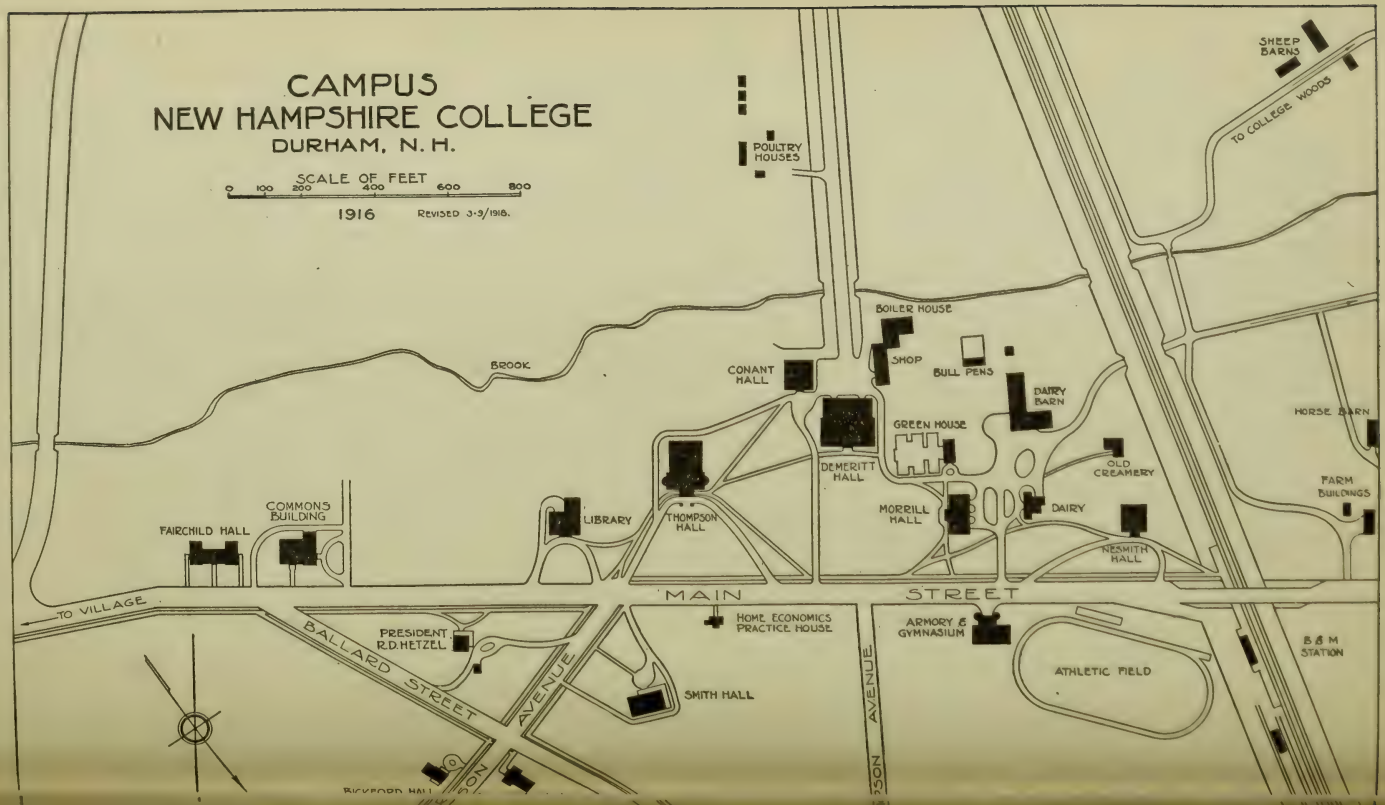
1918–1919

FIFTIETH YEAR

REGISTER, - - 1917-1918
ANNOUNCEMENT, 1918-1919

Durham, New Hampshire
Published by the College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DURHAM, N. H.
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POULTRY HOUSES
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TO COLLEGE WOODS
BOILER HOUSE
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DAIRY BARN
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DEMERITT HALL
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HORSE BARN
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COMMONS BUILDING
FAIRCHILD HALL
LIBRARY
THOMPSON HALL
MORRILL HALL
DAIRY
NESMITH HALL
TO VILLAGE
MAIN STREET
PRESIDENT R.D. HETZEL
HOME ECONOMICS PRACTICE HOUSE
ARMORY & GYMNASIUM
B & M STATION
BALLARD STREET
AVENUE
SMITH HALL
ATHLETIC FIELD
AVENUE

The New Hampshire College of Agriculture and the Mechanic Arts Bulletin

Durham, New Hampshire

APRIL, 1918

Entered as second class matter, August 5, 1907, at the Post Office at Durham, N. H., under the Act of Congress of July 16, 1894

CALENDAR

1918

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..	..	..	..	..	..	..

MAY.

S	M	T	W	T	F	S
..	..	..	..	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31
..	..	..	..	..	..	..

JUNE.

S	M	T	W	T	F	S
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29	30	..	..	..	..	..
..	..	..	..	..	..	..

JULY.

S	M	T	W	T	F	S
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13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31	..	..
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AUGUST.

S	M	T	W	T	F	S
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10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31	..	..	..	..	..	..

SEPTEMBER.

S	M	T	W	T	F	S
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14	15	16	17	18	19	20
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28	29	30	..	..	..	..
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OCTOBER.

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26	27	28	29	30	31	..
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NOVEMBER.

S	M	T	W	T	F	S
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9	10	11	12	13	14	15
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23	24	25	26	27	28	29
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DECEMBER.

S	M	T	W	T	F	S
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14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31	..	..	..
..	..	..	..	..	..	..

COLLEGE CALENDAR.

1918.

First Semester.

Entrance Examinations begin	*Monday, September 16.*
Registration Day	*Wednesday, September 18.*
Address to Student Body	*Thursday, September 19.*
Meeting of Trustees	*Wednesday, October 9.*
College closes at noon	*Wednesday, November 27.*
College opens at 8 a.m.	*Friday, November 29.*
College closes at noon	*Tuesday, December 24.*

1919.

College opens at noon	*Thursday, January 2.*
Meeting of Trustees	*Wednesday, January 8.*
Midyear Examinations begin	*Monday, January 13.*
Midyear Examinations close	*Saturday, January 18.*

Second Semester.

Registration Day	*Monday, January 20.*

BOARD OF TRUSTEES.

His Excellency, Governor HENRY W. KEYES, A.B., B.S., *ex-officio.*

President, RALPH D. HETZEL, A.B., LL.B., *ex-officio.*

*Hon. HARVEY L. BOUTWELL, B.S., LL.D., Malden, Mass., *President.*
Sept. 1, 1911, to Sept. 1, 1920.

Hon. JAMES A. TUFTS, A.B., Exeter, *Secretary.*
Jan. 10, 1914, to June 14, 1919.

†Hon. WALTER DREW, Colebrook.
Aug. 30, 1902, to Aug. 30, 1920.

*Hon. EDWARD H. WASON, B.S., D.Sc., Nashua.
Jan. 16, 1906, to Aug. 1, 1919.

Hon. RICHARD W. SULLOWAY, A.B., Franklin.
May 13, 1909, to Oct. 9, 1918.

Hon. WILLIAM H. CALDWELL, B.S., Peterborough.
July 29, 1912, to July 29, 1918.

Hon. EUGENE S. DANIELL, Greenland.
June 14, 1916, to June 14, 1919.

Hon. ROY D. HUNTER, West Claremont.
June 14, 1916, to June 14, 1919.

Hon. DWIGHT HALL, A.B., Dover.
Oct. 29, 1915, to Oct. 17, 1918.

Hon. ANDREW L. FELKER, Meredith.
July 17, 1917, to July 17, 1920.

Hon. WILLIAM T. NICHOLS, A.B., Manchester.
Feb. 15, 1918, to Feb. 15, 1921.

OFFICERS OF ADMINISTRATION.

RALPH D. HETZEL, A.B., LL.B., *President of the College.*
CHARLES H. PETTEE, A.M., C.E., LL.D., *Dean of the College.*
FREDERICK W. TAYLOR, B.Sc. (Agr.), *Dean of Agricultural Division.*
CHARLES E. HEWITT, B.S., M.M.E., *Dean of Engineering Division.*
ERNEST R. GROVES, A.B., B.D., *Dean of Arts and Science Division.*
HELEN KNOWLTON, A.B., *Dean of Women.*

* Elected by the Alumni.
† Deceased.

JOHN C. KENDALL, B.S., *Director of Experiment Station and Extension Work.*
CONDA J. HAM, A.B., *Registrar and Secretary of the Faculty.*
WALTER M. PARKER, A.B., *Treasurer.*
OREN V. HENDERSON, *Business Secretary.*
OSCAR W. STRAW, *Superintendent of Power and Service.*
NATHANIEL E. CURTIS, *Curator of Buildings and Proctor of Fairchild Hall.*

ASSISTANTS IN ADMINISTRATION.

MARTHA F. EMERSON, *Librarian.*
CHARLOTTE A. THOMPSON, *Assistant Librarian.*
CAROLINE A. BARSTOW, *Assistant Librarian.*
MARCIA N. SANDERS, *Matron of Smith Hall.*
ELIZABETH P. DeMERITT, *Matron of Ballard Hall.*
ARABELLA S. LIVINGSTON, *Matron of Bickford Hall.*
ANNIE J. MORGAN, *Manager of Book Store.*
PEARL E. NOLETTE, *Secretary to the President.*
BEATRICE M. RICHMOND, *Bookkeeper.*
BEULAH M. MADDOX, *Secretary to the Business Secretary.*
MARTHA C. BLODGETT, A.B., *Secretary to the Dean and Assistant to the Registrar.*

THE COLLEGE FACULTY* AND TEACHING STAFF.

RALPH D. HETZEL, A.B., LL.B., *President of the College.*

PROFESSORS.†

CHARLES H. PETTEE, A.M., C.E., LL.D., *Dean.*
CLARENCE W. SCOTT, A.M., LL.D., *Professor of History.*
FREDERICK W. TAYLOR, B.Sc. (Agr.), *Dean of Agricultural Division and Professor of Agronomy.*
RICHARD WHORISKEY, Jr., A.B., *Professor of Modern Languages.*
CHARLES E. HEWITT, B.S., M.M.E., *Dean of Engineering Division and Professor of Electrical Engineering.*
ERNEST R. GROVES, A.B., B.D., *Dean of Arts and Science Division and Professor of Sociology.*
C. FLOYD JACKSON, B.S., A.M., *Professor of Zoölogy and Entomology.*
WALTER C. O'KANE, A.M., *Professor of Economic Entomology.*

* The faculty is composed of the president of the college, full professors, associate professors, assistant professors, and the director of the experiment station and of extension work.

† Arranged in order of seniority of appointment.

CHARLES JAMES, F.I.C., *Professor of Chemistry.*
ALFRED E. RICHARDS, Ph.D., *Professor of English.*
ORMOND R. BUTLER, Ph.D., *Professor of Botany.*
JOSEPH H. GOURLEY, M.S., *Professor of Horticulture.*
OTTO L. ECKMAN, B.S. (Agr.), *Professor of Animal Husbandry.*
JOHN C. KENDALL, B.S., *Director of Experiment Station and Extension Work.*
ERIC T. HUDDLESTON, B.Arch., *Professor of Drawing and Design.*
CHARLES L. SIMMERS, A.B., *Professor of Education and Psychology.*
ROY H. PORTER, B.S., M.E., *Professor of Mechanical Engineering.*
WILLIAM H. COWELL, B.S., *Physical and Athletic Director.*
KARL W. WOODWARD, A.B., M.F., *Professor of Forestry.*
HELEN KNOWLTON, A.B., *Dean of Women and Professor of Home Economics.*
JOHN M. FULLER, B.S., *Professor of Dairying.*
VERNON A. SUYDAM, Ph.D., *Professor of Physics.*
RANDAL KERNAN, *Captain, U. S. A. retired, Professor of Military Science and Tactics.*

ASSOCIATE PROFESSORS.*

†GEORGE A. PERLEY, M.S., *Associate Professor of Chemistry.*
CHARLES C. STECK, A.B., M.S., *Associate Professor of Mathematics, Acting Head of Department.*
WILLIAM H. WOLFF, M.S., *Associate Professor of Pomology.*

ASSISTANT PROFESSORS.*

LEON W. HITCHCOCK, B.S., *Assistant Professor of Electrical Engineering.*
HAROLD H. SCUDDER, B.S., *Assistant Professor of English.*
FORD S. PRINCE, B.S., *Assistant Professor of Agronomy.*
FRIEDA REINER, B.S., *Assistant Professor of Home Economics.*
OLUS J. STEWART, Ph.B., A.B., M.S., *Assistant Professor of Chemistry.*
MARION O'K. McKAY, B.S., A.B., A.M., *Assistant Professor of Economics.*
A. W. RICHARDSON, B.S., *Assistant Professor of Poultry.*
J. R. HEPLER, B.S., *Assistant Professor of Vegetable Gardening.*

INSTRUCTORS.*

THOMAS J. LATON, *Instructor in Drawing.*
CLEMENT MORAN, A.B., *Instructor in Physics.*
CONDA J. HAM, A.B., *Instructor in Accounting.*

* Arranged in order of seniority of appointment.
† Absent on leave.

HARRY P. YOUNG, B.S., *Instructor in Agronomy.*
JAMES MACFARLANE, *Instructor in Floriculture.*
CLIFFORD J. FAWCETT, B.S., *Instructor in Animal Husbandry.*
LYMAN J. BATCHELDER, *Instructor in Wood Shop and Foundry Practice.*
HAROLD D. McBRIDE, *Instructor in Machine Work and Forging.*
CARL A. GARABEDIAN, B.S., M.S., *Instructor in Mathematics.*
CLARENCE R. CLEVELAND, A.B., *Instructor in Economic Entomology.*
RAYMOND J. BEAN, B.S., *Instructor in Zoölogy.*
ARABELLA S. LIVINGSTON, B.S., *Instructor in Home Economics.*
JOSEPH E. KELLEY, A.B., *Instructor in Modern Languages.*
ROSCOE H. VINING, A.M., *Instructor in English and Modern Languages.*
E. L. GETCHELL, B.S., *Instructor in Mechanical Engineering.*
KENNETH B. LAIRD, B.S., *Instructor in Botany.*
MELVIN M. SMITH, B.S., M.A., *Instructor in Chemical Engineering.*
ANGELA W. SHEA, *Instructor in Physical Culture.*
JESSE PIERCE, B.S., *Instructor in Mathematics.*

ASSISTANTS.*

CHARLES F. SCOTT, B.S., *Assistant in History and Political Science.*
HEBER F. DePEW, B.S., *Assistant in Dairying.*
MARION O. PETTEE, A.B., *Assistant in Modern Languages and English.*

* Arranged in order of seniority of appointment.

NEW HAMPSHIRE AGRICULTURAL EXPERIMENT STATION.

BOARD OF CONTROL.

PRES. R. D. HETZEL, A.B., LL.B., *ex-officio*, Durham.
HON. E. H. WASON, B.S., Nashua.
HON. W. H. CALDWELL, B.S., Peterborough.

THE STATION STAFF.

RALPH D. HETZEL, A.B., LL.B., *President.*
JOHN C. KENDALL, B.S., *Director.*
F. W. TAYLOR, B.Sc. (Agr.), *Agronomist.*
B. E. CURRY, A.B., *Chemist.*
W. C. O'KANE, A.M., *Entomologist.*
J. H. GOURLEY, M.S., *Horticulturist.*
O. R. BUTLER, Ph.D., *Botanist.*
E. G. RITZMAN, B.S., *Animal Husbandman.*
K. W. WOODWARD, A.B., M.F., *Forester.*
J. M. FULLER, B.S., *Dairy Husbandman.*
W. H. WOLFF, M.S., *Assistant Horticulturist.*
T. O. SMITH, A.B., *Assistant Chemist.*
FORD S. PRINCE, B.S., *Assistant Agronomist.*
C. R. CLEVELAND, B.S., *Assistant Entomologist.*
HARRY P. YOUNG, B.S., *Assistant Agronomist.*
J. R. HEPLER, B.S., *Assistant in Vegetable Gardening.*
K. B. LAIRD, B.S., *Assistant Botanist.*
JAMES MACFARLANE, *Florist.*
A. D. LITTLEHALE, *Shepherd.*

Assistants to the Staff.

MARTHA F. EMERSON, *Librarian.*
O. V. HENDERSON, *Purchasing Agent.*
BEATRICE M. RICHMOND, *Bookkeeper.*
LAURA B. BICKFORD, *Stenographer.*
ELIZABETH E. MEHAFFEY, *Assistant Librarian and Mailing Clerk.*
ELLEN T. HUGHES, *Stenographer.*
BEATRICE E. CARLISLE, *Stenographer.*

THE EXTENSION SERVICE.

GENERAL EXTENSION STAFF.

RALPH D. HETZEL, A.B., LL.B., *President.*
J. C. KENDALL, B.S., *Director of Extension Work.*
M. C. WILSON, B.S., *County Agent Leader.*
W. P. DAVIS, *Agent in Dairying.*
BERTHA E. TITSWORTH, B.S., *State Home Demonstration Leader.*
L. F. BROWN, B.S., *Assistant Agent in Dairying.*
B. R. GRAVES, *Extension Poultry Husbandman.*

County Agents.

F. N. DARLING, B.S., *Cheshire County.*
A. G. DAVIS, B.S., *Merrimack County.*
R. E. DEUEL, B.S., *Rockingham County.*
B. P. KOCHER, B.S., *Carroll County.*
C. A. SMITH, B.S., *Hillsborough County.*
R. W. SMITH, D.V.M., *Belknap County.*
W. C. STOKŒ, B.S., *Coös County.*
H. N. WELLS, *Sullivan County.*
W. ROSS WILSON, B.S., *Grafton County.*
R. S. WETHERBEE, B.S., *Strafford County.*

County Home Demonstration Agents.

PEARL A. GRANT, B.S., *Merrimack County.*
KATHRYN E. WOODS, *Sullivan County.*
HARRIET A. ACKERLY, *Cheshire County.*

Assistant County Agents.

L. B. ROBINSON, B.S., *Hillsborough County.*
R. J. BUGBEE, B.S., *Grafton County.*
DON D. WARD, B.S., *Rockingham County.*
T. J. ABBOTT, B.S., *Coös County.*
R. W. PEASLEE, B.S., *Merrimack County.*

County Club Leaders.

PERRY W. BURT, B.S., *Cheshire County.*
VINCENT A. PERKINS, *Sullivan County.*
LEWIS J. BROWN, *Strafford and Carroll Counties.*

Boys' and Girls' Club Work.

L. A. CARLISLE, B.S., *State Leader Boys' and Girls' Club Work.*
H. A. MOSTROM, B.S., *Assistant Boys' Club Work.*

H. B. LITTLE, B.S., *Assistant Boys' Club Work.*
M. L. SANBORN, *Girls' Club Work.*
ALICE J. BALLARD, *Assistant Girls' Club Work.*
MARY A. WORCESTER, B.S., *Assistant Girls' Club Work.*

Emergency Home Demonstration Agents.

ANN F. BEGGS, *Hillsborough District.*
HELEN E. OSBORNE, *Rockingham District.*
NEVA E. WOODS, *Coös District.*
MARTHA R. TILDEN, *Belknap District.*
CELIA F. CUTHBERT, *Grafton District.*
RUTH W. SYKES, *Nashua and Concord District.*
IDA D. MOULTON, *Strafford and Carroll District.*
HELEN I. WEED, *Sullivan, Cheshire, and Merrimack District.*
RUTH O. WILKINS, *Manchester District.*
DOROTHY EMERSON, *Portsmouth District.*

Assistants to the Staff.

MARTHA E. FISHER, *Stenographer.*
KATHARINE H. PIPER, *Stenographer.*
FLORENCE E. WALKER, *Stenographer.*
LILLIAN A. TINKER, *Stenographer.*

HISTORICAL SKETCH.

The New Hampshire College of Agriculture and the Mechanic Arts was created by an act of the New Hampshire legislature in 1866 and was established at Hanover as a state institution, in connection with Dartmouth College. In its foundation the state legislature had accepted the conditions of an act of the federal congress of July 2, 1862, entitled "An act donating public lands to the several states and territories which may provide colleges for the benefit of agriculture and the mechanic arts." The state had accepted the land grant three years earlier, July 9, 1863.

In 1893 the college was moved from Hanover to Durham. This action followed the death of Benjamin Thompson, a farmer of Durham, who died January 30, 1890, and left to the college his entire estate, excepting a few minor reservations. The legislature accepted this bequest March 5, 1891, and appropriated the necessary money for the first buildings.

Mr. Thompson wrote in his will, "My object being mainly to promote the improvement of agriculture, though willing that the college to be established should also provide for the mechanic arts, it is my will that the institution to be established by the state . . . shall be called and designated . . . The New Hampshire College of Agriculture and the Mechanic Arts, if that shall be the wish of the state; and that in addition to the instruction to be given therein, as provided by my said will, there shall be taught only such other arts or sciences as may be necessary to enable said state to fully avail itself of said donation of lands by the government in good faith, which two branches of instruction shall be the leading objects of said institution or college."

Shortly before the state accepted this bequest of Mr. Thompson the legislature further provided for the college by

accepting the provisions of an act of congress known as the Morrill Bill. This legislation made available federal appropriations "for instruction in agriculture, the mechanic arts, the English language, and the various branches of mathematical, physical, natural and economic science, with special reference to their applications in the industries of life, and to the facilities for such instruction."

Although the college was able to make use of the Thompson land as early as 1893, it was not until 1910 that the income from this endowment of almost $800,000 became available. At present the college has an annual income from the Thompson funds of nearly $32,000. It also receives the moneys which are available as the result of the acts of congress referred to, and the biennial appropriations of the state legislature.

The college administration is in charge of a board of thirteen trustees. The governor of the state and the president of the college are *ex-officio* members. The college alumni elect two trustees and the others are appointed by the governor with the advice and consent of the council.

EXPERIMENT STATION.

A branch of the college, known as the New Hampshire Agricultural Experiment Station, was established by the state, August 4, 1887, under an act of congress of March of that year. Its purpose is to acquire agricultural knowledge and to bring its information to the people of the state. The station is actively engaged in this work not only in Durham but throughout the commonwealth. Members of the agricultural faculty of the college serve on the station staff.

EXTENSION SERVICE.

The New Hampshire legislature of 1911 appropriated the first financial aid to New Hampshire College specifically for non-resident teaching or extension work. In May of the same year the board of trustees recognized the extension activities of the college as being among the important

functions of the institution and appointed a director of extension work.

Upon the passage of the Smith-Lever law three years later, which provided the state with federal funds for conducting extension work in agriculture and home economics, it gave a decided impetus to this type of teaching. The extension service of New Hampshire College has grown rapidly during the last three years and its activities have been very much extended.

The number of extension workers has been increased until there are at present thirty-four members of the extension staff giving full time to the service. There are also ten home demonstration agents co-operatively employed with the United States department of agriculture, state food administration and the college, who are engaged in giving food conservation demonstrations throughout the state. The United States department of agriculture has assigned four specialists to divide their time between Vermont and New Hampshire. The members of the college and station staff also contribute a large amount of time and render valuable assistance in carrying out the extension program.

GENERAL INFORMATION.

Situation.—Durham, the home of the college, is an attractive village, on the Portland division of the Boston and Maine railroad sixty-two miles from Boston, fifty-four from Portland, Me., and five from Dover, N. H., a city of 13,000 population. Good train service makes the college easily accessible from all parts of the state.

Durham is one of the historic towns of New Hampshire. In the early days it was the home of a prosperous shipbuilding industry. Being at the head of tidewater on the Oyster River, it served as a distributing center for the interior of the state. During the Revolutionary War it was famous as the home of General John Sullivan. Near his home, in the village, the state has erected a fitting monument to his memory.

Courses.—The college is a part of the public school system of the state, continuing the work of the high school, and it is open to both men and women. In accord with the origin and function of the college, its courses are essentially practical, leading directly to the student's preparation for a successful livelihood.

I. Agricultural Division.

a. Four-Year Courses.

1. Animal Husbandry and Dairying.
2. Forestry.
3. Horticulture.
4. Teacher-Training Course in Agriculture.

b. Two-Year Course in Agriculture.

c. Farmers' One-Week Course.

II. Arts and Science Division.

a. Four-Year Courses.

1. General Arts and Science.
2. Home Economics.
3. Mechanic Arts for Teachers.
4. Arts Course in Chemistry.

III. Engineering Division.

a. Four-Year Courses.

1. Chemical Engineering.
2. Electrical Engineering.
3. Mechanical Engineering.
4. Architectural, Electrical and Mechanical Construction.

ESTIMATE OF FRESHMAN EXPENSES.

	First Semester.			Second Semester.		
	High.	Average Student.	Low.	High.	Average Student.	Low.
Tuition	$30.00	*	*	$30.00	*	*
Fees	10.00	$10.00	$10.00	10.00	$10.00	$10.00
Room	42.00	35.00	16.00	42.00	35.00	16.00
Books	10.00	9.00	8.00	10.00	9.00	8.00
Laboratory fees	5.00	2.00		5.00	2.00	
Athletics	5.00	4.00				
Laundry	8.00	5.00	2.00	8.00	5.00	2.00
Incidentals	25.00	10.00	5.00	20.00	8.00	4.00
Military suit	22.00	†8.00	†8.00			
	$157.00	$83.00	$49.00	$125.00	$69.00	$40.00

Board.—To the above must be added an amount necessary to pay table board. Owing to the excessive fluctuations in food costs, it has been impossible to include a fair estimate of board for next year. This will be controlled by the general price level at that time. At the college dormitory the price of board for the women students has varied from $4.25 to $4.50 per week, while the men have paid more than this in the village. However, many of the men are able to materially lower the weekly cost by partially boarding themselves. If college closes April 30, 1919, students will pay board for only 32 weeks.

Rooms.—The college has three dormitories for women and one for men. All rooms are heated, lighted and fur-

* Scholarships.

† Fourteen dollars allowed by government to members of Reserve Officers' Training Corps.

nished with the exception of bed linen, quilts and towels, which are provided by the individual students. Each woman's dormitory is equipped with a laundry. In most cases, two students occupy a room or suite of rooms. Prices range from $60 to $84 for each student per year. Applications for rooms in the dormitories should be made directly to Mr. O. V. Henderson, business secretary of the college. Early application is necessary in order to secure a choice of rooms. Rooms in private families may be secured for about the same prices as for those in dormitories. Less desirable, but comfortable rooms may be obtained by men in several private dormitories at a somewhat less figure.

Women students, unless living at home, are required to room in one of the women's dormitories, or in approved houses.

Tuition and Fees.—Tuition is $60 a year; incidental fees are $20 a year. They are payable in advance in two equal instalments, one on the first day of each semester. A diploma fee of $5.00 is charged upon graduation. Fees for supplies and breakage are assessed in chemistry and certain other subjects where necessary.

Scholarships.—Scholarships are awarded annually for the purpose of aiding deserving students. Recently, the large increase in student attendance has utilized to the full all scholarships thus far provided. However, the trustees are anxious to supply scholarships to all really needy young men and women in New Hampshire. In order to do this, they necessarily require full information of all applicants in order that the benefits may be awarded most equitably.

These scholarships will be forfeited at any time for misconduct, or for the use of intoxicating liquor or tobacco. They will also be withdrawn from students in all four-year courses who fail to secure an average grade of sixty in any one semester, and, only in cases of special financial necessity, will they be restored by the president.

Conant Scholarships.—There are twenty-seven Conant

scholarships, each paying tuition, $60; fees, $20; cash, $20,—total, $100. These are assigned under the following conditions:

They are to be given to young men taking agricultural courses.

Each town in Cheshire County is entitled to one scholarship, and Jaffrey is entitled to two.

They will be reserved for their respective towns until August 1 of each year. Those not taken by students from Cheshire County, and those in excess of the number of towns, will then be assigned to agricultural students from other parts of the state, and may be divided at the discretion of the president. These scholarships are assigned annually and are good for one year only.

Senatorial Scholarships.—There are twenty-four senatorial scholarships, one for each senatorial district. They are at the disposal of the senators from these districts. These scholarships are to be assigned each year and are good for one year only. Each one pays the tuition of $60. The method of appointment is entirely at the option of the senator concerned and may be by election, competitive examination, or otherwise. It is hoped, however, that preference will be given to needy applicants. These scholarships are open to students in all courses, but are restricted to residents of the state.

Grange Scholarships.—For several years a scholarship paying tuition of $60 has been placed at the disposal of each subordinate and Pomona Grange in New Hampshire, for the use of a four-year or two-year student. These scholarships are to be assigned each year and are good for one year only. The method of appointment is entirely at the option of the grange; it may be by election, competitive examination, or otherwise. It is hoped, however, that preference will be given to needy applicants. Holders of these scholarships need not be members of the grange, but must be resident within the state.

Valentine Smith Scholarships.—Through the generosity of the late Mr. Hamilton Smith of Durham, the sum of

$10,000 has been given to establish the Valentine Smith scholarships.

"The income thus accruing to the college shall be given to the graduate of an approved high school or academy who shall, upon examination, be judged to have the most thorough preparation for admission."

These scholarships yield $100 annually and will be forfeited if an average rank of 75 per cent. is not maintained for each semester.

Competitive examinations for this scholarship will be held June 26 and 27 in Durham, Keene, Laconia, Lancaster, Manchester and West Lebanon. Contestants must present credentials fulfilling the requirements for entrance to the college and must pass examinations in English, American history, algebra through quadratics, plane geometry and either physics or chemistry.

Requests for examinations should be forwarded to the Dean of the College at least one week before the beginning of the examination period, and must state the names and addresses of the students, the places at which they will present themselves, and the examinations desired.

Examinations are not restricted to residents of the state.

State Scholarships.—By an annual scholarship appropriation of $3,000, the state provides free tuition for fifty New Hampshire students. These scholarships are awarded annually strictly on the basis of financial need, and are good for one year only. Applicants must furnish full information in relation to their own financial status and that of their parents.

Prizes.—*Bailey Prize.*—Dr. C. H. Bailey of Gardner, Mass., and E. A. Bailey, B.S., of Keene, N. H., offer a prize of ten dollars for proficiency in chemistry.

Erskine Mason Memorial Prize.—Mrs. Erskine Mason of Stamford, Conn., has invested one hundred dollars as a memorial to her son, a member of the class of 1893, the income of which is to be given, for the present, to that member of the senior class who has made the greatest improvement during his course.

Chase-Davis Memorial Medals.—In the spring of 1909 the Glee Club voted to present a gold and a silver medal yearly to the college in memory of Carl Chase, '09, of Webster, an enthusiastic member of the New Hampshire football team and the Glee Club, and of John Worthen Davis, '11, of Concord, who were drowned in Great Bay, December 7, 1908.

According to the terms of this gift, the gold medal is to be awarded to the senior who has won an "N. H." and stands highest in his studies, and the silver medal is to be awarded to the senior who has won an "N. H." and stands second in his studies. These medals are for excellence in athletic competition primarily, and the number of times a man wins an "N. H." during his college career shall be of importance in making the award.

Chi Omega Prize.—The Chi Omega Sorority of New Hampshire College offers a prize of ten dollars for the best thesis on a sociological subject written by a woman student in Sociology 52, 54, or 58.

Lilian S. Edwards Prize.—A fund has been provided by Mrs. Lilian S. Edwards of Sanbornville for the publishing and distribution of the best thesis on a sociological subject written by a student for the Department of Sociology during the second semester of the college year.

College Aid to Students.—Students obtain considerable financial aid by janitorships, by table work at boarding clubs, and by work on the farm and in the greenhouse. They also find employment with the power and service department of the college and with the experiment station. However, so much depends upon the individuality of the student that the college can guarantee nothing in any particular case, but is glad to assist by informing students of opportunities for work.

Students may purchase at cost all books, drawing instruments, materials, etc., at the college book-store in Thompson Hall.

Registration.—Undergraduate students are required to register before 4 p. m. of the first day of each semester. Registration will open on August 1. Those desiring to

register by mail or in person after August 1, should write the registrar for registration blanks, which, when filled out, should be forwarded to the business secretary, together with the students' remittance for his semester's tuition, and fees.

Any former student who registers after the first day of a semester will be charged for such registration a fine of one dollar for the first day and fifty cents additional for each succeeding day, to be remitted only by the president upon presentation by the student of a substantial excuse for delay.

Warnings and Reports of Standing.—New students are notified by the registrar of all studies in which their work has been unsatisfactory, at the end of the first five weeks of the first semester. At the middle of each semester, official warnings of unsatisfactory work are sent to all students. When official warnings totaling more than seven hours are received by any student, a notice is also sent to the parents.

Reports of grades attained are sent, at the close of each semester, to students and to their parents or guardians. In the case of freshmen, they are also sent to the principals of their preparatory schools.

Attendance.—Attendance at convocation is required of all students. Attendance at military drill is required of all men during their first two years unless excused on account of physical disability. Certificates of disability must be obtained of the physician designated by the college, and must be renewed annually. All women except Seniors are required to elect physical culture unless excused for physical disability.

A student absent from the class exercise immediately preceding or following a scheduled holiday or vacation period shall be subject to a fine of $5.00, unless permission for the absence has been granted by the proper committee.

BUILDINGS AND EQUIPMENT.

BUILDINGS.

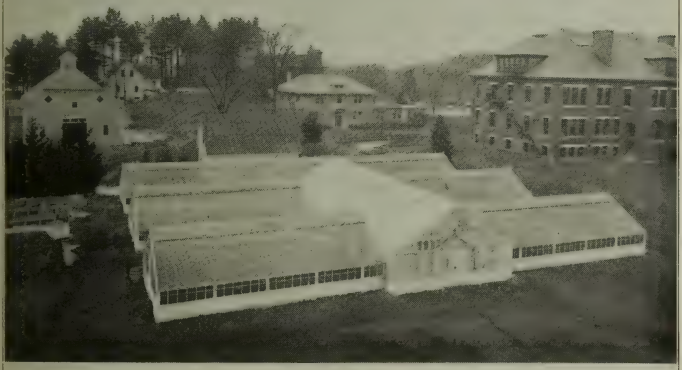
The accompanying cuts give a fair idea of the buildings of the college. While systematically arranged in groups, they are scattered over a considerable area and thus make up a very attractive campus.

Thompson Hall is the main administration building and from its eminence commands a view of the entire campus. It contains, besides recitation rooms, the offices of the president, dean, registrar, business secretary, bookstore, and headquarters of the departments of modern languages, English, education and psychology, zoölogy, economic entomology, and home economics. The gymnasium for women is also in this building.

Morrill Hall is the headquarters of the agricultural division of the college and also has the office of the director of the experiment station and the experiment station library. In this building are the laboratories and lecture rooms of the departments of agronomy, animal husbandry, horticulture, poultry husbandry, and forestry. The building also contains a collection of farm implements and a cattle judging room. The third floor provides quarters for agricultural extension workers, a reading room for agricultural students and The Agricultural Club Room.

DeMeritt Hall.—The engineering building is the most prominent of the engineering group and houses the departments of mechanical engineering, electrical engineering, physics, drawing and mathematics. It contains lecture, recitation, drawing, and office rooms for the several departments; also numerous electrical, mechanical and physical laboratories, each one adapted to and equipped for its specific work.

GENERAL VIEW OF CAMPUS



GREENHOUSES

CHEMISTRY BUILDING & SHOPS

[illegible] HALL
ADMINISTRATION BUILDING

DEMERITT HALL
ENGINEERING BUILDING

GYMNASIUM & DRILL HALL

LIBRARY

PRESIDENT'S RESIDENCE

B & M STATION

MORRILL HALL.
AGRICULTURAL BUILDING

DAIRY BUILDING

NESMITH HALL
EXPERIMENT STATION

DAIRY BARN

HORSE BARN

HORTICULTURAL FARM BUILDINGS

FAIRCHILD HALL
MEN'S DORMITORY

SMITH HALL
WOMEN'S DORMITORY

BALLARD HALL
WOMEN'S DORMITORY

Conant Hall is devoted exclusively to the department of chemistry. The second floor, containing lecture rooms and three laboratories, remains substantially as it has been for a number of years. The first floor has been recently fitted up with modern chemistry desks and other equipment to supply much needed additional laboratory facilities for chemical students. The building is thus well equipped for carrying on the chemical courses of the college, including those connected with chemical engineering, agriculture, and home economics.

The Library.—In accordance with an act of consolidation between the libraries of Durham and the college, the books of the Durham public library and the college are all shelved in one building, forming the Hamilton Smith Public Library. This consolidation makes an especially good collection, the scientific books of the college supplementing well the more popular books of the town library. The consolidated libraries number about 33,000 volumes and the reading room is supplied with 84 periodicals. The departments of sociology, of history and political science, and of economics are located in the library building.

Aside from the main library, each department has its working library of the more technical books and journals.

The library as a whole subscribes for 230 periodicals; 84 of them, non-technical in character, are kept in the periodical and children's rooms; the rest, in the various departmental libraries. Numerous daily and weekly papers are received by the library.

The Dairy Building is well arranged and equipped for purposes of dairy instruction. It contains a commercial creamery, with sanitary milk room, separator room, churning room, and cold storage room; laboratories for instruction in milk testing, milk inspection, farm butter and cheese-making, and bacteriology; also a reading and exhibition room; a class room and offices.

The Shop Building contains a wood shop, a machine shop, a forge shop, a foundry, the boiler house, and a general

repair shop connected with the power and service department.

Locker rooms with lockers are provided for use of students taking subjects in shop work.

Nesmith Hall is occupied by the departments of chemistry and botany of the experiment station and contains the laboratories of the department of botany of the college.

The Armory and Gymnasium contains the offices of the commandant and physical director, the rooms of the College Club and a large drill hall and gymnasium.

President's House.—The present structure is a substantial and convenient building of brick, and was erected in 1904 at an expense of $9,000. It replaced the original wooden structure which was burned in 1903.

Commons Building.—The legislature of 1917 provided $100,000 for erecting a much needed commons building. Disturbed conditions arising from the war prevented the construction in 1917. However, the contract which is let calls for the completion of a portion in time for occupancy in September, 1918.

The building will provide convenient boarding facilities for the student body by means of which it is expected the cost of board will be considerably lessened.

Fairchild Hall.—One of the latest additions to the college buildings is the $60,000 dormitory for men. This building, named in honor of the late president of the college, is a handsome brick structure of colonial design, which furnishes accommodations for 106 men.

No item of necessary dormitory equipment has been forgotten. There are shower baths on each floor and some suites have private toilets. A large general assembly room has been provided for the use of the occupants of the building. The student rooms are furnished, heated and lighted and are cared for by a competent assistant. They are arranged mainly in suites consisting of chamber and study.

Dormitories for Women.—Smith Hall was made possible by the generosity of Mrs. Shirley Onderdonk, of Durham,

who gave $16,000 as a memorial to her mother, Mrs. Alice Hamilton Smith. The remainder of the cost, $10,000, was provided by the state. The building has rooms for 32 girls, and dining accommodations for 75.

Ballard and Bickford Halls were formerly fraternity houses. They have been acquired recently by purchase and lease, remodeled, entirely refitted, and furnish accommodations for 60 girls.

Each dormitory has a large reception room for social use. A competent matron is in charge of each building.

Farm Buildings.—Besides the above, there are numerous farm and other buildings adapted to the needs of the several departments.

EQUIPMENT.

Agronomy.—For the teaching of farm equipment and machinery, this department is provided with drainage levels for laying out drains, plane tables for making farm maps, polar planimeters for measuring plotted areas, a dynamometer and several other pieces of apparatus for studying draft problems. For farm crops work it has a very complete collection of dried specimens of the different forage crops, and the more important varieties of corn, wheat and oats. Seed testing apparatus, grass charts and other illustrative material form a part of the equipment.

The lecture room is equipped with a combined lantern and reflectoscope, together with a large number of lantern slides.

The soil physics laboratory contains soil bins, a compacting machine, chemical and torsion balances and various kinds of physical apparatus for the study of soils, including that for the determination of specific gravity and for the making of mechanical analyses.

The agricultural museum contains the old original "Daniel Webster plow" and other primitive models. It also contains many of the latest types of farm machinery, including plows, cultivators, harrows, mowers, planters, corn and

grain binders, a thresher, manure spreader, different kinds of cattle ties, various makes of woven wire fences, etc.

The college farm, with its 500 acres of land, has a variety of soils suited for the growth of various farm crops. Land on nearby farms is rented for the growing of corn and potatoes so that good opportunities are afforded for practical work and demonstration in the production of field crops.

Animal Husbandry.—For the various courses in animal husbandry an extensive use is made of the live stock of the college farm. The dairy herd consists of representative animals of the following breeds: Ayrshires, Guernseys, Jerseys and Holsteins. The college owns nine horses representing the draft type, and in order to become acquainted with the carriage and roadster types, the students are taken to various stock farms where these types may be inspected and judged. For the study of the different breeds of sheep, the experiment station flock is used. For the study of swine students are taken to nearby farms, since for the present the college owns no swine.

In the agricultural building a large room is fitted up for the judging of live stock, and score cards with a scale of points for each kind of animal are used.

The class room is provided with a stereopticon lantern and a large collection of lantern slides is used to show the leading individuals of the different breeds of live stock. The herd books of the most prominent breeds are used for the purpose of familiarizing the student with methods of tracing pedigrees and with the practices of breeders' associations.

Botany.—The department of botany has the usual laboratory equipment to meet the needs of the courses in general botany, plant physiology and bacteriology. In the advanced courses, owing to the connection of the department with the experiment station, students will find both the laboratory and greenhouse equipment ample for critical studies on plant diseases and plant nutrition.

Chemistry.—The several chemical laboratories are fairly

well equipped. Each is supplied with most of the forms of apparatus required for its particular work. Besides all necessary glass and procelain ware, this includes water baths, drying ovens, combustion, muffle and assay furnaces, platinum dishes and crucibles, polariscope, spectroscope, balances, lantern and other lecture appliances.

Dairying.—The dairy department, with its well planned dairy building, offers excellent opportunities for instruction in technical and practical dairy work. The college creamery is well equipped with up-to-date machinery, each machine being run by a separate electric motor.

In addition to the product of the college herd, milk and cream are received from over forty farms in Durham and vicinity. By this arrangement sufficient material is furnished for practical work. The farm dairy room is equipped with the leading makes of hand separators, and hand and small power churns suitable for private dairies. The milk testing and milk inspection laboratory is equipped with Babcock testers, sediment testers, acidimeters and other apparatus necessary for the testing and inspection of milk and cream. The bacteriological laboratory has the equipment necessary for work in dairy bacteriology.

Drawing.—The department of drawing is well equipped to meet the needs of the subjects offered. The drafting rooms are supplied with tables and lockers and the free-hand studio with suitable stands and easels. For engineering and machine drawing there is an excellent collection of working models and machine parts, and various machines in other departments are available for this work. For free-hand drawing there is a good supply of geometric models, and for advanced work in charcoal drawing the nucleus of a good collection of plaster casts exists, consisting of historic ornament, details of plant and animal life and of the human form. For special work in this subject there is available the museum of casts, consisting of examples of antique and modern sculpture. For work in architectural drawing an excellent library of books and periodicals and blue prints of

all classes of buildings are available for reference and use in the drafting rooms while a goodly collection of samples of building materials is being added to from time to time.

Electrical Engineering.—The laboratory for electrical engineering occupies the ground floor of the south end of the new engineering building. It has a total area of about 4,500 square feet. There is one room 104 by 36 feet for dynamo electric machinery. In this main dynamo room there is a large distributing switchboard, on which are mounted instruments, switches, circuit breakers, ground detectors, synchronizers and plugging devices so arranged that it is possible to connect the various rooms and convey thereto direct current and single, two-phase and three-phase alternating current of different voltages and frequencies.

In addition to this main dynamo room there is a room used for photometry, one for storage battery and one for high potential experiments. The laboratory also includes an instrument room, a mechanician's room and a dark room.

The general equipment of the laboratory includes various dynamos and motors for both direct and alternating currents, several transformers, the necessary measuring instruments and storage batteries, adapted to the needs of students taking this course.

Recently the department has received as a gift from Sears, Roebuck & Company of Chicago, Ill., one electric light plant consisting of engine, dynamo, switchboard, and storage battery. The department has also received as a gift from the Domestic Engineering Company, one of the Delco-light sets including engine, dynamo, switchboard and storage battery. Both of these plants are of the 32-volt type adapted for isolated plant work. These plants are available for demonstration, also for laboratory experiments.

In addition to the regular laboratory equipment, there is available for testing purposes a fully equipped sub-station having a capacity of 75,000 watts supplied by the Rockingham County Light and Power Company, of Portsmouth, N. H. A part of this equipment consists of an automatic

induction feeder regulator, including contact making voltmeter and reversing switch.

Farm Department.—New Hampshire College has a large, well-equipped farm. This farm serves as a laboratory for much of the instruction in agriculture where approved methods and practices may be seen and where the students may gain experience by actually performing the work with their own hands.

The college farm proper consists of about 385 acres of which about 100 are in forest and woodland; about 45 are occupied by the campus and athletic field; about 95 are tillage land, and about 145 are pasture land. A part of both the pasture and tillage land is utilized by the agronomy, horticulture, and animal husbandry departments of the experiment station. Small tracts of suitable land on adjoining farms are also rented for experimental purposes.

A farm of 120 acres adjacent to one corner of the college farm and having a complete set of buildings, has recently been purchased primarily for the department of horticulture. This farm contains one of the best orchard sites in this part of the state, also about 20 acres of forest and about 50 acres of pasture.

The farm buildings consist of a large dairy barn, a horse barn 36 x 68 with basement and hay storage loft, two sheep barns, and two general storage barns. The dairy barn has two 125-ton silos, storage capacity for about 120 tons of hay, and a well-appointed, sanitary stable accommodating 40 cows and the usual complement of calves and yearlings. A building 16 x 18 with individual yards has been erected for housing the herd bulls.

Forestry.—The demand for instruction in forestry at the college has been increasing from year to year and the legislature of 1911 provided for a separate department of forestry. The course is intended to provide not only a special training in forestry, but a broad general training in other lines of agriculture closely related to it. For those who desire to make forestry their life work, every encouragement and

assistance will be given. Additional work at some graduate school of forestry is now almost a necessity, owing to the large number of men entering the profession.

Durham is well situated with reference to the study of woodlot forestry. All types of native second-growth forests are found nearby and the college owns a tract of 60 acres of old-growth timber where exceptional opportunities are given for the study of mature forests. There are other areas where practice will be given in establishing plantations of forest trees by various methods. A nursery for the growing of seedling forest trees has been established.

All the necessary instruments for making forest maps and measurements, together with collections of wood specimens, lantern slides and photographs, are available in connection with this work.

Home Economics.—The home economics department is located in two large rooms in Thompson Hall. The food laboratory is fitted with work desks, storage cupboards and apparatus for cooking. The desks are built in cabinet form to hold the necessary utensils and materials for each student. Each table is fitted with both gas and electric stoves and ovens.

The cooking utensils are of the materials best suited to the use of each. Standard measuring apparatus and scales are provided.

A storage cabinet is provided with bins for supplies and cupboard space for large utensils.

The sewing equipment consists of sewing machines, cabinets, tables, and dress-forms.

Various educational exhibits, both food and textile, are owned and used by the department for illustrative purposes.

The reference library of books, bulletins and journals is deposited partly in this room and partly in the main library.

Mechanical Engineering Department.—This department is located in DeMerritt Hall. On the second floor is the drafting room which is given over to advance drawing and designing. In addition to the drafting room there are two

lecture rooms, and department offices. One of the lecture rooms is equipped with stereopticon lantern and screen, so that illustrated lectures may be given at any time.

In the basement is located the Mechanical Engineering Laboratory, the north end of which is given over to a materials' testing room, in which are tested all kinds of building materials, oil and fuel. The main room is given over to steam, gas and hydraulic testing. The equipment consists of three gasoline engines, two high speed steam engines, and one 25 H. P. Murray-Corliss. For hydraulic work there are various kinds of meters, weir tanks, and pumps. In addition to the laboratory equipment mentioned there is a supply of indicators, gages, thermometers and other small apparatus for testing and research work.

Military Department.—This department is in charge of an officer of the United States regular army, detailed by the War Department, as a professor of military science and tactics. Military instruction, which is required by law, is both theoretical and practical, the former having special reference to the duties of the line.

The organization is a battalion of three companies, having a band, and officered by cadets selected for character, soldierly bearing, and efficiency. The federal government has furnished U. S. magazine rifles, model 1898, and equipment. Attention is paid to rifle practice, the government supplying ample ammunition and target materials, and the college a range within four minutes' walk of the college buildings, with firing points at 200 and 300 yards. The rolling country in the vicinity of the college furnishes opportunities for extended order drill and field exercises, the athletic field for close order drills, and the gymnasium gives room for indoor work.

The cadets wear, when on duty of a military character, an olive drab cloth uniform as prescribed by standing orders of the War Department. This costs about twenty-two dollars. The government allows fourteen dollars annually toward payment for a new uniform.

Service in this department for juniors and seniors is

limited to those men who are selected for further training by the President of the College and the Professor of Military Science and Tactics. Those so selected who agree to continue in the department for the remainder of their college course, and to pursue the subject in camp training prescribed by the War Department, receive from the government pay at the rate of the allowance for commutation of rations for the regular service.

Upon graduation of each class the names of those students who have shown special aptitude for military service are reported to the adjutant-general of the army, and to the adjutant-general of the state, and they receive a special certificate for military proficiency.

Physics.—Besides the necessary furniture the department is supplied with the usual small tools, calipers, scales balances, weights, hydrometers, calorimeters, thermometers, etc., and with other apparatus for the performance in the laboratory of experiments in mechanics, heat, sound light, magnetism and electricity.

The lecture room has a small but growing collection of apparatus for the illustration, both experimentally and with the projection lantern, of the laws of matter and energy in their various relations, and of the history of physics. There has recently been added to the lecture equipment a set of the well-known Evans P. E. D. equipment, which makes it possible to illustrate most of the phenomena in electrodynamics which are treated in general physics.

Instruction is carried on by means of lectures with stencil outlines furnished to students and constantly kept up to the development of the subjects, recitations and discussions based on standard text-books, and experimental work in the laboratory. Stencil outlines are furnished for the laboratory experiments, with concise directions and references and reports are written by the students on the results of their experiments, for examination and criticism by the instructor.

The physics department occupies most of the west end of the engineering building. In the basement there are two small rooms for individual work, a switchboard room, a

room for storage battery and for chemical work, a storage room, and a large laboratory room for work in subjects yet to be developed. On the first floor are the general laboratory, partly divided off into small rooms for work in light or for balances, a room for apparatus storage, the office and a recitation room. On the second floor are the lecture room and a room for the storage of lecture apparatus.

Poultry Husbandry.—The demand for poultry has been increasing from year to year. The work of the department was made possible by an act of the legislature in 1913.

The funds thus appropriated have been used toward the building of a poultry plant.

The buildings consist of a permanent long house and several colony houses. These furnish capacity for about 500 birds.

Five breeds of poultry are kept, namely, Barred Plymouth Rocks, Rhode Island Reds, White Leghorns, White Rocks, and Light Brahmas.

Students are given work in incubation, house construction, judging, killing and dressing.

Shopwork.—The wood shop is equipped with thirty-three benches and complete sets of tools for 160 students. Each bench is equipped with modern vises. Other equipment consists of a universal pattern maker's saw, board-planer, buzz-planer, band saw, speed-lathes and a large pattern maker's lathe with boring attachment.

The equipment of the machine shop consists of engine lathes, speed-lathe, vertical drill, planer, large universal milling machine, plain milling machine, shaper, power hack saw, tool grinder, twelve benches with vises and bench lathes, and a large number of small tools, including micrometers, calipers and gages necessary for accurate work.

In the forge shop are seventeen Sturtevant down-draft forges with anvils and necessary tools. The blast to the forges is furnished by a No. 4 blower, and the smoke is carried away by a 60-inch exhauster. These are driven by a small steam-engine.

All the shops are operated by 550-volt three-phase induction motors, suitably connected to line shafting and driving the tools by the "group plan."

Zoölogy.—This institution is favorably situated geographically for the study of zoölogy. Within a few minutes' walk of the laboratory, the Oyster river meets the tide water from Great Bay. This furnishes a gradation of salt, brackish and fresh water with an abundance of their characteristic fauna. Great Bay, the Piscataqua river and the open ocean are within easy access, and have their own peculiar, characteristic forms. On the other hand, there are numerous bodies of fresh water, with typical fresh water forms.

The department of zoölogy is prepared to offer courses along the following lines: (A) systematic zoölogy; (B) physiology and sanitation; (C) philosophical zoölogy; (D) anatomical zoölogy.

The equipment for the work in systematic zoölogy consists of a well-lighted laboratory, provided with tables, charts, dissecting and compound microscopes. All of the latest books and periodicals on systematic zoölogy are at the student's disposal. The lecture room is fitted with a new reflectoscope capable of projecting opaque objects, textbook figures or lantern slides. The room has a seating capacity of eighty, and is provided with tablet armed chairs which enable the students to readily take down notes and drawing. There is a fairly complete collection of local invertebrates, and a very good collection of the birds of New Hampshire. The work in systematic entomology is greatly aided by a large and complete collection of insects which is the property of the experiment station.

The proximity to both salt and fresh water renders the work in advanced systematic zoölogy unusually attractive In addition to the regular collecting equipment, nets aquaria, etc., advanced students also have the use of row boats and a gasolene launch.

In the work in physiology, hygiene and sanitation, the department is provided with an unusually fine collection o

injected preparations of the human body, and with numerous charts. The same laboratory and equipment is used in this work as noted above.

For work in evolution and experimental zoölogy the department has a very complete library. Studies in ecology in Great Bay and vicinity are encouraged, for which purpose the students have the use of a camera equipment. In addition to the study of evolution under natural conditions the department also furnishes aquaria for laboratory study and experiments.

The work in anatomical zoölogy is greatly facilitated by an abundance of fresh material which may be collected as needed. For the study of human and comparative anatomy a full set of skeletons and preserved material is provided. Students interested in histology have access to a private collection of some two thousand microscope slides.

Museum.—The museum had for a nucleus the collection made during the state geological survey. To this additions have been made from various sources. Specimens are being collected to illustrate the zoölogy of New Hampshire, and New Hampshire collectors and naturalists are invited to make the museum the permanent depository of their collections.

FOUR-YEAR COURSES.

AGRICULTURAL DIVISION.

The courses of this division are designed for the general education and scientific training of students in the various economic branches of agriculture. The lecture and recitation work of the classroom is supplemented largely by practical exercises in the laboratories. Seminar studies are also given, especially for seniors and advanced students. During junior and senior years students may elect certain courses of study which will enable them to specialize in animal husbandry, dairying, horticulture, or forestry. They may also specialize in preparation for teaching agriculture.

While the two-year course is intended to give the student as thorough training in the science and practical details of farm operations as the time will allow, it does not give the opportunity for a broad general foundation of pure and applied science that the four-year courses afford; the latter courses aim primarily to combine a college education with that of a technical vocation. Many of the graduates of the four-year courses return to the farm for the purpose of putting into practice the knowledge and training of their college work, and many of them are becoming successful and prosperous citizens of the community; others who have no farms of their own accept salaried positions as superintendents or foremen on the dairy, fruit or truck farms of large owners; still others take positions as teachers of science and agriculture in our secondary and high schools or as assistants in our agricultural colleges and experiment stations.

The Agricultural Division offers the following four-year courses of study:

Animal Husbandry and Dairy Course.—This course is designed for those students who wish to specialize either

in animal husbandry or dairying. Election of subjects between these two departments may be made throughout the junior and senior years. The dairy building with its new and complete equipment, together with the additional subjects and increased facilities for instruction in the animal husbandry department, make this course especially attractive.

Forestry Course.—The forestry course offers to students who have entered the agricultural division an opportunity to specialize in forestry during the junior and senior years. This arrangement allows the student to devote a large amount of time to the various branches of forestry, but at the same time requires a foundation of agriculture and the subjects upon which agriculture depends. The forestry department is located on the second floor of Morril Hall. The college forest of sixty acres of old-growth pine and hemlock, and other areas of natural and planted growth, furnish the laboratory for the forestry student. Ample opportunity is given to study the various forest problems on the ground as well as in the classroom.

Horticultural Course.—This is the course for those students who contemplate making a specialty of some line of horticultural work. Several advanced subjects in botany will be required, while during the senior year opportunity will be given to elect subjects in other departments. The horticultural department is well equipped with gardens, orchards, greenhouses and laboratories for the study of the different phases of this industry, especially fruit growing, which is so prominent in the agriculture of the state.

Teacher Training Course in Agriculture.—Under the provisions of the Smith-Hughes act New Hampshire College has been designated as the institution in this state for the training of teachers of agriculture. The course of study provided for this purpose requires that at least 40 per cent of the work consist of technical agricultural subjects, 20 per cent of subjects in related sciences, and 10 per cent of educational subjects including special methods and four to

six weeks of practice teaching in secondary schools. Students who have completed the prescribed course of study will be accredited as qualifying under the Smith-Hughes act, provided that in addition they have had:

(a) farm up-bringing prior to such course, or
(b) two years' agricultural experience, one of which is in a recognized agricultural enterprise on a commercial scale.

The rapidly increasing demand for teachers of agriculture in our secondary schools has indicated the necessity of training men especially for this important line of work, and the teacher training course is designed to meet the need.

ARTS AND SCIENCE DIVISION.

In the Arts and Science Division the following courses are offered.

General Arts and Science Course.—This course provides a general college training which especially prepares for secondary school teaching, business or graduate study. By means of the group system of elective studies an opportunity is given the student to specialize in zoölogy, botany, chemistry, physics, drawing, agriculture, mathematics, modern languages, English, psychology, sociology, political science, economics, history, home economics, and education.

Home Economics Course.—The course in home economics furnishes instruction in the branches that especially serve the need of women students. The work is planned to meet the demands of the day for scientific training in home making, to fit students to enter fields of professional activity in educational and institutional lines of work, and to provide thorough training for those students who wish to elect home economics as either a major or a minor subject in the Arts and Science Course.

The technical work in household science is based upon the principles of physical, biological and social sciences. The

subjects in foods, nutrition and dietetics require physics, chemistry and physiology; those in sanitation necessitate a knowledge of chemistry and bacteriology; home administration and the care and education of children, a knowledge of the principles of human nutrition and dietetics, principles of economics, psychology and sociology. The training in drawing, color, and design which is gained in the department of drawing is related to the work in costume design and house decoration.

Beginning with 1918–19 there will be offered two types of home economics courses:

(1) Teacher-training course. This is to train students for meeting state requirements for teaching in the Smith-Hughes high schools.

(2) A general course as heretofore offered. The footnotes on page 61 indicate the difference in these two courses.

Mechanic Arts Course for Teachers.—This course provides an opportunity for preparation for the teaching of mechanic arts and manual courses in secondary schools and institutions. It originated to meet the increasing demand for graduates of the college qualified to teach manual and mechanic arts courses. Although much of the work of this course is necessarily prescribed in such subjects as drawing, mathematics, shop work, English, psychology and education, a reasonable opportunity is given the student to elect other subjects in the Arts and Science Division. At the present time the demand for graduates from this course for secondary teaching is greater than the college can satisfy.

The Arts Course in Chemistry.—This is a general course in chemistry, less technical in character than the chemical engineering course. It prepares for certain kinds of commercial chemistry, secondary science teaching, and affords a splendid basis for graduate work in medical schools. The considerable amount of electives permits the student to choose work in education if professional preparation for teaching is desired.

ENGINEERING DIVISION.

Chemical Engineering Course.—This course is intended to fit for the career of professional chemist or chemical engineer, and to give a good foundation for original and independent chemical research.

Instruction is imparted by lectures, recitations and a large amount of carefully supervised laboratory work. The laboratory study is largely an individual one and the work of each student is conducted with reference, not only to the particular object he may have in view, but also to the acquirement of a broad knowledge of chemical science. The student is given a thorough training in German and French to enable him to read with ease the chemical literature; a thorough grounding in mathematics, necessary for advanced theoretical chemistry or chemical engineering; a somewhat limited amount of special engineering work, both mechanical and electrical; and a thorough undergraduate training in theoretical and applied chemistry. He is encouraged to develop the power of solving chemical problems by independent thought through the aid of the reference works and chemical periodicals which the library contains.

Electrical Engineering Course.—The electrical engineering course is intended to meet the demands of young men fitting themselves for practical and professional engineering in connection with the various applications of electricity.

By means of lectures, recitations and laboratory work the subjects of the course are brought to the attention of the student in such a manner as not only to emphasize the present needs of the practitioner and engineer, but to give him the groundwork that will enable him to grasp and understand the constantly increasing number of problems that require solution.

The instruction aims to impart a complete practical and theoretical knowledge of the best modern types of electrical machines and appliances and the methods of designing, building and operating them.

The rapid progress in recent years in applying electricity

to commercial uses renders it difficult, if not impossible, for one without a technical education to gain prominence in the work and be intrusted with its more responsible positions.

Mechanical Engineering Course.—The mechanical engineering course is intended to train young men for positions of responsibility in the field of the mechanical industries. The studies in the course are scientific, including mathematics, physics and chemistry; technical, including drawing, shop work, thermodynamics, hydraulics, machine design, electrical engineering, power engineering, and cultural studies, calculated to enable the technical man to take his proper place in the world of men.

Instruction is given by means of text-book work and laboratory work whenever possible. When necessary this work is supplemented by illustrated lectures and assigned reading. Throughout the course the theoretical work is supplemented by actual practice in mechanical operation and scientific research, by training in the use of tools for working wood and metals, and by experimental tests and demonstrations in the mechanical, chemical and physical laboratories.

ARCHITECTURAL, ELECTRICAL AND MECHANICAL CONSTRUCTION COURSES.

For the first time, the engineering division offers four-year courses in architectural, electrical and mechanical construction. The present great demands of the war department for trained mechanics and technicians brings out very forcibly the need of courses for training men along these lines, in preparation for the great work that must be done in the way of reconstruction after the war.

The subjects offered in these courses have been so chosen as to involve less mathematics, physics and mechanics and more shop work, laboratory work and drawing than is required for our regular four-year engineering courses.

It will be noted that the subjects taken in the first semester of the freshmen year are the same as given in the regular four-year electrical and mechanical engineering courses.

The differentiation takes place at the end of the first semester. A student who finds trouble in his mathematics can elect one of these constructional courses and will thus be able to receive a good, four-year technical course which will fit him for practical work along constructional lines.

All of the subjects with numbers less than 100 are regular four-year ones, description of which will be found in the catalog under the particular department where they are given. All numbers 100 or more are new subjects adapted to meet the requirements of these new courses in construction. Description of the new courses will also be found under the department where they are given.

POST-GRADUATE AND SPECIAL COURSES.

The college offers opportunity for post-graduate study in agriculture, biology and chemistry, and on the completion of satisfactory work advanced degrees will be given. Persons of mature years presenting satisfactory evidence of their ability to complete any desired course of study may be admitted as special students by vote of the faculty.

METHODS OF ADMISSION.

New Hampshire College will admit without examination all candidates for admission who are graduates of high schools or academies of New Hampshire that are approved by the State Department of Public Instruction, provided the division entrance requirements of the college be met.

Graduates of schools specially approved by the college, will be admitted on the same terms as graduates of approved schools in New Hampshire.

Graduates of other high schools and academies will be admitted on passing examinations in fifteen units. However, the college can not agree to give examinations in certain vocational subjects involving mainly practical work, but may require special certification in such subjects.

Cases not covered by the above statements will be decided by the entrance committee of the faculty.

Candidates for advanced standing are admitted on the basis of the work completed at the institutions from which they come.

DIVISION UNIT REQUIREMENTS.

There are three divisions of New Hampshire College; the Agricultural, the Arts and Science, and the Engineering. These divisions are defined and described elsewhere in this announcement.

An entrance unit represents one study of four or five recitations a week for one year. It is assumed that two hours of manual training or laboratory work are equivalent to one hour of classroom work.

Candidates for admission to the freshman class of the various divisions of the college must show evidence, either by credentials or by examination, that they are prepared in fifteen units as indicated in the following table:—

Required Units		Agricultural Division.	Arts and Science Division.	Engineering Division.
Group A	English,	3	3	3
Group B	Mathematics,	2	2	3
Group C	Social Science and History,	1	1	1
Group D	Natural Science,	1	1	1
		7	7	8
Elective Units		8	8	7
Total for admission,		15	15	15

Elective units may be offered from groups A, B, C, D, and also from

Group E Foreign languages, ancient or modern.

Group F Vocational subjects: agriculture, commercial subjects, domestic arts, mechanic arts.

However, not more than four vocational units will be accepted.

The credentials to be rendered by principals must state the time of graduation, the subjects studied, the number of entrance units in each, the grades attained by the student and the passing grade of the school.

The credential forms to be used will be furnished by the college on application to the registrar.

The study of algebra and plane geometry may be combined as in Myers' textbook provided two units are offered for the combined work.

A candidate for admission to the Arts and Science Division who offers two units in a foreign language may substitute for the two units required in mathematics two units in either social or natural science, or one in each.

Candidates for admission to the Engineering Division may offer solid geometry for a part of the ad[illegible] mathematics. This is not required, but is hig[illegible] Students presenting solid geometry as a part [illegible] units required for entrance will be obliged to tak[illegible] alent in hours for solid geometry (Mathematics [illegible] dents presenting solid geometry in addition to [illegible] units required for entrance may obtain credit for solid

geometry (Mathematics 53), by passing a thorough examination. For the required unit in natural science, physics or chemistry is advisable.

Entrance by Examination.—Examinations, commencing September 16, will be given in subjects named in the groups A–F, at the college. They will also be given in connection with the Valentine Smith examinations in June (see page 19). Requests for these examinations should be forwarded to the Dean of the College at least one week before the beginning of the examination period.

ENTRANCE REQUIREMENTS.

GROUP A. ENGLISH.

The examination paper in English will be based upon the principle that the way to learn to write is to read.

All candidates will therefore be required to write a series of short themes which will show an adequate knowledge and thorough appreciation of certain great English classics as literature—as "the life blood of the mind." The classics selected are as follows: Shakespeare's Merchant of Venice, Henry V, and Macbeth; one novel each by Scott, Dickens, George Eliot, Stevenson, Cooper and Hawthorne; one essay each by Macaulay, Ruskin and Lowell; the subject-matter and nature of the poetry of Wordsworth, Byron, Tennyson, Longfellow and Whittier.

As a special test in spelling, grammar, punctuation and paragraphing, the candidate will be required to write a short theme upon some subject pertaining to the home or school life of the average high school senior.

An optional question will be offered for the purpose of dis-
recitation [illegible] candidate's familiarity with the best modern
hours of [illegible] literature.
to one [illegible]

Ca[illegible]

GROUP B. MATHEMATICS.

var[illegible] **[illegible]entary Algebra.**—The four fundamental oper-
[illegible] rational algebraic expressions. Factoring, deter-
mination of highest common factor and least common mul-

tiple by factoring. Fractions, including complex fractions, and ratio and proportion. Linear and quadratic equations, both numerical and literal. Problems depending on linear and quadratic equations. Radicals, including the extraction of the square root of polynomials and of numbers. Exponents, including the fractional and negative.

2. **Advanced Algebra.**—The formula for the *n*th term and the sum of the terms of arithmetical and geometrical progressions, with applications. The theory and use of logarithms, without involving the use of infinite series. The binomial theorem for positive integral exponents. Complex numbers, with graphical representation of sums and differences. Determinants limited to simple cases. The elements of the theory of equations.

3. **Plane Geometry.**—The usual theorems and constructions of good textbooks, including the general properties of plane rectilineal figures; the circle and measurement of angles; similar polygons; areas; regular polgons, and the measurement of the circle. The solution of numerous original exercises including loci problems. Applications to the measurement of lines and plane surfaces.

4. **Solid Geometry.**—The usual theorems and constructions of good textbooks, including the relations of lines and planes in space; the properties and measurement of prisms, pyramids, cylinders and cones; the sphere and the spherical triangle. The solution of numerous original exercises including loci problems. Applications to the measurement of surfaces and solids.

5. **Plane Trigonometry.**—The subject matter of plane trigonometry as presented in good textbooks, including the solution and use of trigonometric equations of a simple character, the use of logarithms, the solution of right and oblique triangles, and practical applications.

6. **Review Mathematics.**—A general mathematics review during half of senior year is recommended, especially for students preparing for college engineering courses. A

certificate covering the work of not more than one unit will be accepted for entrance. No examinations will be given.

GROUP C. SOCIAL SCIENCE AND HISTORY.

This group includes history, political economy, and commercial law.

Although there are excellent textbooks in history, an adequate preparation cannot be obtained by textbook work alone. Some collateral work is necessary, whatever textbook is used, and with certain textbooks a large amount is necessary. The details of the preparatory work in history are fully stated in A History Syllabus for Secondary Schools, by the New England History Teachers' Association. Boston, D. C. Heath & Co., 1904. Details are also stated in Standard Program for the Secondary Schools of New Hampshire, Department of Public Instruction, Concord, N. H.

1. **Ancient History.**—This may include the earliest nations and the period to 800 A. D., or it may be limited to Grecian History and Roman History to the fall of the Western Roman Empire.

2. **Mediaeval and Modern History.**

3. **English History.**

4. **American History and Civics.**—The work may conform to the course in American constitutional history described in the Standard Program or to the course in American history developed in nearly a hundred pages of the Syllabus. It is assumed that in any case a reasonable amount of time is to be given to the study of the Constitution of the United States.

5. **Political Economy.**—(1) The study of a standard text. (2) At least six topics investigated by outside reading.

6. **Commercial Law.**—(1) Study of a standard text. (2) The study of a total of not less than thirty-six specific cases.

GROUP D. NATURAL SCIENCE.

A notebook, carefully kept and examined by the teacher, is an essential part of all laboratory work in science.

1. **Botany.**—The work in botany should consist of (1) the study of a standard text; (2) four or five exercises per week, at least one of which should be laboratory work. Either a half or the whole of a year's work will be accepted.

2. **Chemistry.**—Elementary inorganic chemistry. Should cover the commoner nonmetallic and metalic elements with their most important compounds, together with an introduction to the general theoretical principles. Calculations based upon changes of gaseous volumes and chemical equations. A year's work of four or five exercises per week, at least one of which should be laboratory work.

3. **Physics.**—The standard work in physics should consist of (1) The study of a standard text; (2) not less than forty experiments worked out in the laboratory by each student and properly recorded in a suitable notebook.

4. **Zoölogy.**—A study of the fundamental principles of animal structure and the dissection of type forms. The student should become familiar with the characteristics of the various phyla of the animal kingdom. Four or five exercises per week, at least one of which should be laboratory work. Either a half or the whole of a year's work will be accepted.

GROUP E. FOREIGN LANGUAGES.

1. **French.**—Work of the first year should include (1) careful drill in pronunciation, (2) drill upon the rudiments of grammar, (3) abundant translation of simple English prose into idiomatic French, (4) reading of from 100 to 175 pages of French prose, (5) writing French from dictation. Work of the second year should include (1) the reading of from 250 to 400 pages of easy modern prose, (2) constant practice in translating from English into French variations

of the text read, (3) frequent paraphrases of the text read, (4) dictation.

2. **German.**—Work of the first year should include (1) careful drill in pronunciation, (2) drill upon the rudiments of grammar, such as the inflection of the articles, the common nouns, adjectives, pronouns, and strong and weak verbs; upon the uses of the prepositions, the modal auxiliaries, and the rules of syntax and word order, (3) writing from dictation, (4) the reading of from 75 to 100 pages of prose, (5) translation from English into German. Work of the second year should include (1) the reading of from 150 to 200 pages of prose, (2) constant practice in translating from English into German variations of the text read, (3) dictation, (4) continued drill upon the rudiments of grammar, (5) frequent paraphrases of the text read.

3. **Latin, Elementary.**—Grammar and four books of Caesar. Two years' work.

4. **Latin, Advanced.**—Virgil, six books. Cicero, six orations.

GROUP F. VOCATIONAL SUBJECTS.

1. Agriculture.

Agronomy.—A textbook or lecture and recitation subject upon the formation, classification, composition, physical properties and tillage of soils; the kinds, use, value, and function of different chemical fertilizers; the use, composition, and preservation of farm manures; the planting, cultivation, harvesting, use, and marketing of the different kinds of field crops. The textbook and lecture work should be supplemented by field and laboratory exercises. Four or five periods per week for one year.

Animal Husbandry and Dairying.—A textbook and recitation subject upon the types and breeds of horses, cattle, sheep, swine, and poultry with practical exercises in stock judging; a study of the principles of feeding, the classification of animal foods, with practice in computing and mixing

rations. Also a subject upon the composition, properties, care and handling of milk, with practical exercises in testing milk, cream, and butter with the Babcock test. Four or five exercises per week for one year.

Horticulture.—A textbook or lecture and recitation subject upon the classes and varieties of fruits; the location and fertilization of orchards; the pruning, grafting, and spraying of fruit trees, with some study of fungous and insect pests. Practical exercises in picking, packing, and marketing of fruit. Also a study in vegetable growing in which each student learns the classes, varieties, uses, and adaptations of our most important vegetables. Practical gardening work in growing vegetables. Four or five exercises per week for one year.

Rural Economics and Farm Management.—A textbook, lecture and recitation subject upon the economic relations of land, labor, and capital. A detailed study of the cost of producing and marketing farm and garden crops. Also a study of the business end of farming, buying and selling methods, types of farming, systems of rotation, the keeping of farm accounts, and the making of inventories. Four exercises per week for one year.

2. **Commercial Subjects.**—Bookkeeping, commercial arithmetic, commercial geography, stenography, and typewriting.

3. **Domestic Arts.**—Foods and cookery, dressmaking, household sanitation and mechanical appliances, household economics, household design and decoration.

4. **Mechanic Arts.**—Casting, drawing, forging, machine work, molding, pattern-making, woodwork.

REQUIREMENTS FOR DEGREES.

ADVANCED DEGREES.

Advanced degrees may be conferred upon candidates who have received the degree of B.S. from this college or any institution of like standing upon the fulfilment of the following requirements:

Degree of M.S.—The successful completion of a course of graduate study pursued in residence and approved by the faculty of the college.

The preparation of an original thesis satisfactory to the faculty of the college.

Degree of M.E.—Professional experience of at least four years.

The successful completion of a course of graduate study approved by the Engineering Division Committee.

The preparation of an original thesis satisfactory to the faculty of the college upon some subject approved by the Engineering Division Committee.

For details concerning the regulations governing the conferring of degrees address Dean C. H. Pettee.

UNDERGRADUATE DEGREES

The college confers two undergraduate degrees: Bachelor of Science and Bachelor of Arts.

The degree of Bachelor of Science is conferred upon students graduating from the Agricultural Division, from the Engineering Division and upon students graduating from the Arts and Science Division who have elected the Home Economics Course, the Mechanic Arts Course for teachers or who have majored in group 2 of the General Arts and Science Course. The degree of Bachelor of Arts is conferred upon students graduating from the General Arts and Science Course who have majored in group 1 or 3.

Agricultural Division.

The completion of 144 semester hours.

The completion of the studies required in one of the following courses:

(a) Animal Husbandry and Dairying.
(b) Forestry.
(c) Horticulture.
(d) Teacher Training Course in Agriculture.

Students graduating from the four-year courses in agriculture must present to the dean of the division on or before the second Tuesday preceding commencement satisfactory evidence of having had practical experience in farm work, either through having lived on a farm for at least two years subsequent to the age of 12 or through having worked on a farm for at least six months subsequent to the age of 16.

Students graduating from the Forestry Course must have spent at least three months in practical forest work, which time will be counted as a part of the six months' requirement.

Arts and Science Division.

(a) General Arts and Science.

1. The completion of 136 semester hours, of which a minimum of 18 shall be required each semester of the freshman year and a minimum of 16 hours each semester thereafter.

2. The completion of English 51 and 52.

3. The completion of the military and physical culture requirements or their equivalent.

4. The completion of major and minor requirements as follows.

The Arts and Science courses are divided into three groups:

Group I.—Language and Literature: English, French, German, Latin, Spanish.

Group II.—Mathematics and Natural Science: Mathematics, Zoölogy, Botany, Geology, Meteorology, Chemis-

try, Home Economics, Agricultural subjects*, Drawing, Physics.

Group III.—History and Social Science: History, Economics, Education, Political Science, Psychology, Sociology.

Group Requirements.

Each Arts and Science student shall elect at least 18 semester hours in each of the above three groups.

Major Requirements.

Each Arts and Science student shall, at the middle of his second year, select a department to be known as his major department.

In this major department, he shall complete 18 semester hours in which he shall make a grade of 70 or better.

In case of departments in which less work is offered than the amount required for the major, the shortage may be made up from such other related departments as the head of his major department may prescribe.

Minor Requirements.

Each student shall, with the approval of the head of his major department, elect for a minor 18 semester hours of subjects related to his major.

Student Advisers.

1. For Freshmen and First Semester Sophomores:

A committee of three faculty members shall be appointed by the dean of the Arts and Science Division to act as advisers for freshmen and first semester sophomores, and the elective slip of each must be approved by a member of this committee.

2. For Second Semester Sophomores, Juniors, and Seniors:

A student shall have for his adviser the head of his major department; provided, that in case a student majors in a department outside the Arts and Science Division, his elec-

* Agricultural subjects as part of minor only.

tive slip shall also be approved by the dean of the Arts and Science Division.

(b) Home Economics.

The completion of 136 semester hours.

The completion of the courses required in the Home Economics branch.

(c) Mechanic Arts for Teachers.

The completion of 144 semester hours.

The completion of the courses required in the Mechanic Arts Course for Teachers.

Students desiring to be accredited to teach industrial education in Smith-Hughes schools should take the regular work as prescribed in the Mechanic Arts course for teachers. The required work of the second semester of the senior year should be taken during the second semester of the junior year. Also the student should work in the shops during two summers of his college career, and during the second semester of his senior year.

(d) Arts Course in Chemistry.

The completion of 138 semester hours.

The completion of the courses required in the Arts Course in Chemistry.

Engineering Division.

The completion of 148 hours.

The completion of the studies in one of the following branches:

(a) Chemical Engineering.
(b) Electrical Engineering.
(c) Mechanical Engineering.
(d) Architectural, Electrical and Mechanical Construction Courses.

Additional Hours.

Students desiring to take additional hours, should consult their advisers. The advisers have discretion with regard

to two additional hours; more than two are allowed subject only to the approval of a proper division committee.

THESES.

The preparation of a thesis upon some subject connected with the work of the division may be required of candidates for a degree by the division committee.

The subject of a thesis, together with a written approval by the head of the department concerned, must be filed with the registrar within one week of the opening of the second semester. The thesis is to be submitted to the head of the department not later than the second Tuesday preceding commencement day.

It is to be typewritten or printed upon standard thesis paper, eight and one-half by eleven inches, medium weight, and must be neatly bound in black cloth and gilt-lettered on the first cover with title, name of author, degree sought and year of graduation. This bound copy is to be filed and left with the college librarian before commencement day.

COURSES OF STUDY.

(For details, see Description of Studies which follows.)

AGRICULTURAL DIVISION.

All Courses.

FRESHMAN YEAR.

First Semester.	Credit Hours	Second Semester	Credit Hours
Agriculture, 1 Survey of	1	*Bot. 52*, Gen. Bot.	3
An. Husb. 51, Breeds of Live Stock	3	*Chem. 52*, Inor. Chem.	3
Bot. 51, Gen. Bot.	3	*Draw. 54*, Agr. Draw.	2
Chem. 51, Inor. Chem.	3	*Engl. 52*, Composition	3
Engl. 51, Composition	3	*Math. 22*, Trigonometry	3
Mil. Art 1	2	*Mil. Art 2*	2
Zoöl. 51, Gen. Zoöl.	3	*Zoöl. 52*, Sys. Zoöl.	3

SOPHOMORE YEAR.

First Semester.		Second Semester.	
Agron. 51, Agr. Eng.	3	**A. H. 52*, Live St'k Judging	2
Chem. 59, Intro. Qual. Anal.	2	*Chem. 60*, Quant. Anal.	3
Ent. 1, Econ. Ent.	3	*Dairy 52*, Farm Dairy	3
For. 51, Principles of Forestry	3	*Hort. 52*, Veg. Gardening	2
Math. 23, Surveying	3	*Hort. 54*, Pract. Pomology	3
Mil. Art 3	2	*Mil. Art 4*	2
Phys. 51, Mech. and Heat	2	*Phys. 52*, Mag. and Elec.	2
		Poultry 2, Farm Poultry	3

Animal Husbandry and Dairy Course.

JUNIOR YEAR.

First Semester.		Second Semester.	
Agron. 53, Farm Crops	3	*Agron. 52*, Soils	3
A. H. 55, Anat. of Farm An., *or* *Dairy 53*, Buttermaking	3	*A. H. 54*, Feeds and Feeding	3
Bot. 55, Bacteriology	3	*A. H. 56*, Infect. Dis. of An., *or* *Dairy 58*, Cheese and Ice Cream	3
Geol. 51, Elements of Geol.	3	*Bot. 56*, Bacteriology	3
Shop 55, Forge Work	2	*Dairy 54*, Market Milk	3
Electives	4	*Shop 54*, Wood Work	2
		Electives	2

SENIOR YEAR.

First Semester.		Second Semester.	
Agron. 55, Farm Manag't.	3	*Agron. 54*, Fertilizers	3
A. H. 57, Animal Breeding	3	*Econ. 8*, Agr'l Econ.	3
Econ. 1, El. Econ.	3	Electives	11
Meteor. 1,	2		
Electives	6		

* Elective.

Forestry Course.

JUNIOR YEAR.

First Semester.	Credit Hours	Second Semester.	Credit Hours
Bot. 53, Plant Physiol.	3	*Agron. 52*, Soils	3
Bot. 55, Bacteriology	3	*Bot. 54*, Plant Histology	3
For. 53, Dendrology	3	*For. 52*, Silviculture	3
For. 55, Silviculture	4	*For. 54*, For. Mensuration	3
Geol. 51, El. Geol.	3	*Hort. 56*, Landscape Gard'ng	3
Electives	2	Electives	3

SENIOR YEAR.

First Semester.		Second Semester.	
Bot. 57, Plant Pathology	3	*Econ. 8*, Agr'l Econ.	3
Econ. 1, El. Econ.	3	*For. 56*, Forest Manag't	4
For. 57, Forest Protection	2	*For. 59*, Practice of For.	3
Met. 1	2	Electives	7
Electives	8		

Horticultural Course.

JUNIOR YEAR.

First Semester.		Second Semester.	
Agron. 53, Farm Crops	3	*Agron. 52*, Soils	3
Bot. 53, Plant Phys.	3	*Hort. 56*, Landscape Gard'ng	3
Bot. 55, Bacteriology	3	*Hort. 58*, Nursery Manag't	3
Geol. 51, El. Geol.	3	*Hort. 60*, Floriculture	2
Hort. 53, Greenhouse Manag.	3	*Hort. 68*, Veg. Forcing	3
Shop 55, Forge Work	2	*Shop 54*, Wood Work	2
Electives	2	Electives	2

SENIOR YEAR.

First Semester.		Second Semester.	
Agron. 55, Farm Manag't.	3	*Agron. 54*, Fertilizers	3
Bot. 57, Plant Path.	3	*Econ. 8*, Agr'l Econ.	3
Econ. 1, El. Econ.	3	*Hort. 62*, Seminar	1
Hort. 55, Sys. Pomology	4	*Hort. 64*, Evol. of Plants	2
Met. 1	2	Electives	8
Electives	2		

Teacher Training Course in Agriculture.

JUNIOR YEAR.

First Semester.		Second Semester.	
Agron. 53, Farm Crops	3	*Agron. 52*, Soils	3
Bot. 55, Bacteriology	3	*Agron. 58*, Farm Acc't.	2
An. Husb. 55, Vet. Anat. *or* *Dairy 53*, Buttermaking	3	*An. Husb. 54*, Feeds and Feeding	3
Educ. 5, Sec. Educ.	3	*An. Husb. 56*, An. Dis. *or* *Dairy 58*, Cheese Mak.	3
Geol. 51, Elem. Geol.	3	*Dairy 54*, Market Milk	3
Shop 55, Forge Work	2	*Psych. 52*, Introd. Psych.	3
Elective	2	*Shop 54*, Wood Work	2

SENIOR YEAR.

First Semester.	Credit Hours	Second Semester.	Credit Hours
Agron. 55, Farm Manag't	3	*Agric. 2*, Meth. of Teach	[illegible]
An. Husb. 57, An. Breeding	3	*Agron. 54*, Fertilizers	[illegible]
Econ. 1, Elem. Econ	3	*An. Husb. 52*, Stock Judg	[illegible]
Meteorology 1	2	*Econ. 8*, Agr'l Econ. *or* / *Soc. 54*, Rur. & Com. Soc.	[illegible]
Psych. 53, Adol. Psych	3	*Educ. 4*, School Hygiene	[illegible]
Elective	3	*Educ. 6*, Indus. Educ	[illegible]
		Hort. 64, Improv. of Plants	[illegible]

ARTS AND SCIENCE DIVISION.

General Arts and Science Course.

All elective except English 51 and 52, Military Art, and for women Home Economics 1 and Physical Culture.

FRESHMAN YEAR.

First Semester.		Second Semester.	
Chem. 51, Inor. Chem	3	*Chem. 52*, Inor. Chem. *or* / *Chem. 56*, Spec. Chem.	[illegible]
Chem. 55, Inor. Chem	4	*Draw. 52*, Mach. Draw	[illegible]
Draw. 51, Eng. Draw	2	*Draw. 64*, Free-hand Draw	[illegible]
Draw. 63, Free-Hand Draw	2	*Econ. 2*, Com. Geog	[illegible]
Engl. 51, Comp. and Rhet	3	*Engl. 52*, Comp. and Rhet	[illegible]
Fr. 1, El. Fre	3	*Engl. 54*, Intro. to Engl. Lit	[illegible]
Ger. 1, El. Ger	3	*Fr. 2*, El. Fre	[illegible]
Hist. 1, European, 476–1492	3	*Ger. 2*, El. Ger	[illegible]
H. E. 1, Person. Hygiene	1	*Hist. 2*, European, 1492–1715	[illegible]
H. E. 3, El. Sewing	1	*H. E. 2*, The House	[illegible]
Latin 1, Livy	3	*H. E. 4*, El. Sewing Cont	[illegible]
Math. 1, Trig	3	*Latin 2*, Horace	[illegible]
Math. 3, Algebra	3	*Math. 2*, Anal. Geom	[illegible]
Mil. Art 1	2	*Math. 4*, Calculus	[illegible]
Phys. Cult. 1	1	*Mil. Art 2*	[illegible]
Span. 1, El. Span	3	*Phys. Cult. 2*	[illegible]
Shop 51, Wood Work	2	*Span. 2*, El. Span	[illegible]
Zoöl. 51, Gen. Zoöl	3	*Zoöl. 52*, Gen. Zoöl	[illegible]
		Zoöl. 58, Hum. Anat. and Physiol	[illegible]

SOPHOMORE YEAR.

(All elective except Military Art, and Physical Culture.)

First Semester.		Second Semester.	
Bot. 51, Gen. Bot	3	*Bot. 52*, Gen. Bot	[illegible]
Chem. 57, Spec. Org. Chem	3	*Chem. 68*, Org. Chem	[illegible]
Chem. 59, Intro. Qual. Anal	2	*Draw. 64a*, Adv. Free-hand Draw	[illegible]
Draw. 53, Descr. Geom	3	*Draw. 68*, House Planning	[illegible]
Draw. 63a, Adv. Free-hand Draw	2	*Econ. 2*, Com. Geog	[illegible]
Draw. 67, Home Economics Draw	2	*Engl. 54*, Intro. to Engl. Lit	[illegible]
Econ. 1, El. Econ	3	*Engl. 56*, Argum	[illegible]
Educ. 1 or 3, Hist. of Educ	2	*Engl. 58*, Eliz. Drama	[illegible]
Engl. 53, Adv. Comp. and Lit. Crit.	3	*Ent. 2*, Appl. Econ. Ent	[illegible]

	Credit Hours		Credit Hours
Engl. 63, Writing for Pub.	3	*Ent. 4*, Hsehld. Insects	2
Ent. 1, Econ. Ent.	3	*Fr. 4*, Prose	3
Fr. 3, Prose	3	*Ger. 4*, Prose	3
Ger. 3, Prose	3	*Hist. 4*, European, since 1815	3
Hist. 3, European, 1715–1815	3	*H. E. 6*, Textiles	2
H. E. 7, Foods	4	*H. E. 8*, Foods	4
Math. 5, Calculus	3	*Math. 6*, Calculus	3
Mil. Art 3	2	*Mil. Art 4*	2
Phys. Cult. 3	1	*Phys. Cult. 4*	1
Phys. 51, Mech. and Heat	2	*Phys. 52*, Magn. and Elec.	2
Phys. 53, General Physics	6	*Phys. 54*, General Physics	6
Phys. 59, El. Optics	2	*Phys. 58*, El. Phys. and Prac.	3
Soc. 51, Prim. Man and Soc. Origins	3	*Psych. 52*, Intr. to Psych.	3
Span. 1, El. Span.	3	*Span. 2*, El. Span.	3
Span. 3, Prose	3	*Span. 4*, Prose	3
Zoöl. 51, Gen. Zoöl.	3	*Zoöl. 52*, Syst. Zoöl.	3
Zoöl. 53, Faunal Zoöl. (Invert.)	3	*Zoöl. 54*, Faunal Zoöl. (Vert.)	3

JUNIOR YEAR.

First Semester.		Second Semester.	
Bot. 53, Plt. Physio.	3	*Bot. 54*, Plt. Hist.	2
Bot. 55, Gen. Bact.	3	*Bot. 56*, Bact.	3
Bot. 57, Plt. Path.	3	*Chem. 68*, Org. Chem.	3
Chem. 65, Quant. Anal.	4	*Draw. 70*, Color and Design	2
Dairy 51, Dom. Dairy	3	*Econ. 4*, Mon. and Bank., *or*	3
Draw. 69, Free-hand Drawing	2	*Econ. 6*, Pub. Fin. and Tax.	
Econ. 5, Labor Prob.	3	*Econ. 8*, Agr'l Econ.	3
Econ. 9, Corp. Fin.	3	*Econ. 14*, Cost Acctng.	3
Econ. 13, Acctng.	3	*Econ. 16*, Auditing	3
Engl. 53, Adv. Comp. and Lit. Crit.	3	*Educ. 4*, Sch. Hyg.	2
Engl. 55, The Engl. Novel, *or*	3	*Engl. 54*, Intr. to Engl. Lit.	3
Engl. 57, Mod. Engl. Poetry		*Engl. 56*, Arg.	3
Engl. 61, Mod. Engl. Prose	3	*Engl. 58*, Eliz. Drama	3
Engl. 63, Writing for Pub.	3	*Engl. 60*, Am. Lit.	4
Ent. 1, Econ. Ent.	3	*Engl. 62*, Shak's Plays	3
Ent. 3, Insects of Dom. Ani.	2	*Ent. 4*, Hsehld. Insects	2
Ent. 5, Adv. Econ. Ent.	2	*Ent. 6*, Adv. Econ. Ent.	3
For. 51, Prin. of For.	3	*For. 52*, Silv.	3
Fr. 5 or 7, Fr. Lit. and Comp.	3	*Fr. 6 or 8*, Fr. Lit. and Comp.	3
Geol. 51, El. Geol.	3	*Ger. 6*, Goethe, *or*	3
Ger. 5, Goethe, *or*	3	*Ger. 8*, Schiller, *or*	
Ger. 7, Schiller, *or*		*Ger. 14*, Sudermann	
Ger. 13, Sudermann		*Ger. 10 or 12*, Germ. Comp. and Conv.	3
Ger. 9 or 11, Ger. Comp. and Conv.	3	*Hist. 6*. American, 1801–1861	3
Hist. 5, Am. to 1801	3	*H. E. 10*, El. Dressmkg.	2
H. E. 5, H. E. in Hist	2	*H. E. 12*, Diet.	3
H. E. 11, Prin. of Nutr.	3	*Math. 8*, Adv. Calc.	3
H. E. 13, House Dec.	2	*Math. 10*, Teaching of Sec. School Math.	2
Math. 7, Dif. Eq.	3	*Math. 12*, Adv. Anal. Geom.	3
Math. 9, Th. of Eq.	3	*Mil. Art 6*	3
Math. 11, Adv. Anal. Geom.	3	*Min. 54*	2
Mil. Art 5	3	*Phys. Cult. 6*	1
Phys. Cult. 5	1	*Phys. 54*, General Physics	6
Phys. 53, General Physics	6		

	Credit Hours
Pol. Sci. 3, Am. Const. Law	3
Psych. 53, Psych. of the Adoles.	3
Soc. 53, Ment. Def., *or* *Soc. 55*, Soc. Psych.	3
Span. 1, El. Span.	3
Zoöl. 59, Hyg. and San.	3
Zoöl. 61, Embr.	3
Zoöl. 65, Comp. Anat.	3
Zoöl. 67, Hist.	3

	Credit Hours
Pol. Sci. 2, Laws of Bus.	3
Psych. 52, Intr. to Psych.	3
Soc. 52, Soc. Path. and Mod. Phil.	3
Span. 2, El. Span.	3
Zoöl. 54, Faunal Zoöl.	3
Zoöl. 60, Adv. San.	3
Zoöl. 66, Comp. Anat. of the Vert.	3

SENIOR YEAR.

First Semester.

Bot. 53, Plt. Physiol.	3
Bot. 55, Gen. Bact.	3
Bot. 57, Plt. Path.	3
Chem. 71, Organ. Chem. Lab.	3
Dairy. 51, Dom. Dairy	3
Econ. 5, Labor Prob.	3
Econ. 9, Corp. Fin.	3
Econ. 13, Acctng.	3
Econ. 15, Adv. Acctng. Prob.	3
Educ. 5, Sec. Educ.	3
Educ. 7, Prin. of Educ.	3
Educ. 9, Adm. and Super.	2
Engl. 55, Engl. Novel, *or* *Engl. 57*, Mod. Engl. Poetry	3
Engl. 59, Chaucer, *or* *Engl. 65*, Hist. of Law	3
Engl. 61, Mod. Engl. Prose	3
Ent. 1, Econ. Ent.	3
Ent. 3, Insects of Dom. An.	2
Ent. 5, Adv. Econ. Ent.	3
Fr. 5 or 7, Fr. Lit. and Comp	3
Geol. 51, El. Geol.	3
Ger. 5, Goethe, *or* *Ger. 7*, Schiller, *or* *Ger. 13*, Sudermann	3
Ger. 9 or 11, Ger. Comp. and Conv.	3
Hist. 7, American since 1860	3
H. E. 15, Dressmkg.	2
H. E. 19, Hsehld. Adm.	3
Math. 7, Diff. Eq.	3
Math. 9, Th. of Eq.	3
Math. 11, Adv. Anal. Geom.	3
Met. 1	2
Mil. Art 7	3
Phys. Cult. 7	1
Pol. Sci. 3, Am. Const. Law	3
Soc. 53, Ment. Def.	3
Span. 3, Prose	2
Thesis	2
Zoöl. 55, Syst. Ent.	3
Zoöl. 60, Adv. Zoöl.	3
Zoöl. 71, Voc. Zoöl.	3

Second Semester.

Astr. 2	2
Bot. 54, Plt. Hist.	2
Bot. 56, Bact.	3
Chem. 76, Phys. and Elec. Chem.	3
Econ. 4, Mon. and Bank., *or* *Econ. 6*, Pub. Fin. and Tax.	3
Econ. 8, Agr'l Econ.	3
Econ. 14, Cost Acctng.	3
Econ. 16, Auditing	3
Educ. 6, Ind. Educ.	2
Engl. 56, Arg.	3
Engl. 58, Eliz. Drama	3
Engl. 60, Am. Lit.	4
Engl. 62, Shak.'s Plys.	3
Engl. 66, Teach. Course	1
Ent. 2, Appl. Econ. Ent.	3
Ent. 4, Hsehld. Insects	2
Fr. 6 or 8, Fr. Lit. and Comp.	3
Geol. 52, Hist. Geol.	3
Ger. 6, Goethe, *or* *Ger. 8*, Schiller, *or* *Ger. 14*, Sudermann	3
Ger. 10, or 12, Ger. Comp. and Conv.	3
H. E. 26, Survey of Foods	2
Math. 8, Adv. Calculus	3
Math. 10, Teaching of Sec. School Math.	2
Math. 12, Adv. Anal. Geom.	3
Mil. Art 8	3
Phys. Cult. 8	1
Pol. Sci. 2, Laws of Bus.	3
Soc. 54, Rural Soc.	3
Soc. 56, Intr. to Gen. Soc., *or* *Soc. 58*, Soc. Eth.	3
Span. 4, Prose	3
Thesis	1 or 2
Zoöl. 56, Orn.	3
Zoöl. 62, Adv. Neu.	3
Zoöl. 64, Evol. and Gen.	3
Zoöl. 68, Insect Anat.	3
Zoöl. 70, Adv. Zoöl.	3
Zoöl. 72, Voc. Zoöl.	3

Home Economics Course.

FRESHMAN YEAR.

First Semester.	Credit Hours	Second Semester.	Credit Hours
Required Subjects:		Required Subjects:	
Chem. 55, Inor. Chem.	4	*Chem. 56*, Inor. Chem.	3
Engl. 51, Comp. and Rhet.	3	*Engl. 52*, Comp. and Rhet.	3
H. E. 1, Personal Hyg.	1	*H. E. 2*, The House	2
H. E. 3, El. Clothing	3	*Physics 58*, El. Phys.	3
†*Phys. Cult. 1*	1	*Phys. Cult. 2*	1
Zoöl. 51, Gen. Zoöl.	3	*Zoöl. 58*, Hum. Anat. and Physiol.	3
*Elective Subjects: total hrs.	3	*Elective Subjects: total hrs.	3

SOPHOMORE YEAR.

First Semester.		Second Semester.	
Required Subjects:		Required Subjects:	
Chem. 57, Org. Chem.	3	*Draw. 68*, House Planning	2
Draw. 67, H. E. Draw.	2	*H. E. 6*, Textiles	2
H. E. 7, Foods and Cooking	4	*H. E. 8*, Foods and Cooking	4
Phys. Cult. 3	1	*Phys. Cult. 4*	1
Zoöl. 59, Hyg. and Sanitation	3	*Psych. 52*, Intro. to Psych.	3
*Elective Subjects: total hrs.	3	*Elective Subjects: total hrs.	4
‡*Phys. 57*, Household Phys.	3		

JUNIOR YEAR.

First Semester.		Second Semester.	
Required Subjects:		Required Subjects:	
Bot. 55, Bact.	3	*Draw. 70*, Color and Design	2
Draw. 69, Freehand Draw.	2	*H. E. 10*, El. Dressmaking	2
Econ. 1, El. Econ.	3	*H. E. 12*, Dietetics	3
H. E. 11, Nutrition	3	*H. E. 14*, House Decor.	2
Phys. Cult. 5	1	*Phys. Cult. 6*	1
*Elective Subjects: total hrs.	4	*Elective Subjects: total hrs.	6
Chem. 69, Household Chem.	3	‡*Educ. 4*, School Hygiene	2
Dairy 51, Domes. Dairy	3	‡*Poultry 6*, Poul. for the Home	2
‡*Psych. 53*, Adoles. Psych.	3		

SENIOR YEAR.

First Semester.		Second Semester.	
Required Subjects:		Required Subjects:	
H. E. 15, Dressmaking	2	*H. E. 22*, Seminar	1
H. E. 19, Household Admin.	3	*Soc. 52*, Soc. Path. and Mod. Philan.	3
Soc. 51, Primitive Man	3	*Zoöl 64*, Evol. and Genetics	3
*Elective Subjects: total hrs.	8	*Elective Subjects: total hrs.	9
‡*Educ. 5*, Secondary Educ.	3	‡*Educ. 6*, Hist. of Ind'l Educ.	2
		‡*H. E. 24*, Teachers' Study	3

*The student has a choice of a wide range from all departments of the college.

†Required of students not offering physics for entrance if they are training for teaching in Smith-Hughes schools

‡Should be elected by all students intending to teach, and is necessary to enable one to qualify for teaching in Smith-Hughes high schools.

Mechanic Arts Course for Teachers.

FRESHMAN YEAR.

First Semester.	Credit Hours	Second Semester.	Credit Hours
Chem. 51, Inor. Chem.	3	*Chem. 52*, Inor. Chem.	3
Draw. 51, Eng. Draw.	2	*Draw. 52*, Mach. Draw.	3
Engl. 51, Engl. Comp. and Rhet.	3	**Econ. 2*, Com. Geog.	3
Math. 1, Trig.	3	*Engl. 52*, Comp. and Rhet.	3
Math. 3, Alg.	3	**Math. 2*, Anal. Geom. / **Math. 4*, Calculus	6
Mil. Art 1	2	*Mil. Art 2*	2
Shop 51, Wood Work	2	*Shop 52*, Wood Work	2

SOPHOMORE YEAR.

First Semester.		Second Semester.	
Chem. 59, Intro. Qual. Anal.	2	*Draw. 64*, Free-hand Draw	2
Draw. 53, Descr. Geom.	3	**Engl. 56*, Arg.	3
Econ. 1, El. Econ.	3	**Ger. 2*, El. Ger.	3
**Ger. 1*, El. Ger.	3	*Mil. Art 4*	2
**Math. 23*, Surveying	3	*Phys. 52*, Mag. and Elec.	2
Mil. Art 3	2	*Phys. 58*, El. Phys. and Prac.	3
Phys. 51, Mech. and Heat	2	*Psych. 52*, Intr. to Psych.	3
Shop 59, Wood Work	3	*Shop 60*, Wood Work	3
**Zoöl. 51*, Gen. Zoöl.	3	**Zoöl. 52*, Gen. Zoöl.	3

JUNIOR YEAR.

First Semester.		Second Semester.	
Draw. 65, Arch. Draw.	2	*Draw. 66*, Arch. Draw.	2
Educ. 5, Sec. Educ.	3	**Econ. 4*, Mon. and Bank., *or* / **Econ. 6*, Pub. Fin. and Tax'n	3
Engl. 53, Adv. Comp.	3	*Educ. 4*, Sch. Hyg.	2
**Engl. 55*, Engl. Novel, *or* / **Engl. 57*, Mod. Engl. Poetry	3	**Engl. 58*, Eliz. Drama	3
For. 53, Dend.	3	**For. 60*, For. Util.	3
**Geol. 51*, El. Geol.	3	**Ger. 4*, Prose	3
**Ger. 3*, Prose	3	**Hist. 2*, European, 1492–1715	3
**Hist. 1*, European, 476–1492	3	**Mil. Art 6*	3
**Mil. Art 5*	3	**Pol. Sci. 2*, Laws of Bus.	3
Shop 65, Wood Work	2	*Shop 66*, Forge Work	3

SENIOR YEAR.

First Semester.		Second Semester.	
E. E. 9, Ind. Elec.	3	*Draw. 72*, Prac. Math.	1
**Engl. 55*, Engl. Novel, *or* / *Engl. 57*, Mod. Engl. Poetry	3	**Econ. 4*, Mon. and Bank., *or* / **Econ. 6*, Pub. Fin. and Tax'n	3
**Mil. Art 7*	3	*Educ. 6*, Ind. Educ.	2
**Pol. Sci. 3*, Am. Const. Law	3	**Engl. 60*, Am. Lit.	4
Psych. 53, Adol. Psych.	3	**For. 60*, For. Util.	3
Shop 67, Shop Teach.	2	**Hist. 6*, American, 1801–1861	3
Shop 71, Mach. Work	3	*M. E. 72*, Man. Tr.	1
Soc. 51, Prim. Man and Soc. Orig.	3	**Mil. Art 8*	3
		Shop 72, Mach. Work	3
		**Soc. 52*, Soc. Path.	3
		**Soc. 54*, Rural Soc.	3

* Elective.

Arts Course in Chemistry.

FRESHMAN YEAR.

First Semester.	Credit Hours	Second Semester.	Credit Hours
Chem. 51, Inorgan. Chem.	3	*Chem. 52*, Inorgan. Chem.	3
Engl. 51, Comp. and Rhet.	3	*Chem. 54*, Qual. Anal.	3
Fr. 1, El. Fr., *or* / *Ger. 1*, El. Ger.	3	*Fr. 2*, *or* / *Ger. 2*	3
Math. 3, Algebra	3	*Engl. 52*	3
Bot. 51, *or* / *Zoöl. 51*	3	*Bot. 52*, *or* / *Zoöl. 52*	3
Mil. Art 1	2	*Mil. Art 2*	2

SOPHOMORE YEAR.

First Semester.		Second Semester.	
Chem. 61, Qual. Anal.	1¼	*Chem. 66*, Quant. Anal.	5
Chem. 65, Quant. Anal.	4¾	*Chem. 68*, Org. Chem.	3
Chem. 67, Org. Chem.	2	*Ger. 16*	3
Drawing 51	2	*Math. 2*, Anal. Geom.	3
Ger. 3, *or* / *Fr. 3*	3	*Mil. Art*	2
Math. 1, Trig.	3	*Shop 68*, Mach. Work	2
Mil. Art.	2		

JUNIOR YEAR.

First Semester.		Second Semester.	
Chem. 71, Org. Chem. Lab.	4	*Chem. 76 or 78*	3
Chem. 73, Adv. Quant. Anal.	4	*Chem. 74a*, cont. of 73	3
Chem. 75 or 77	4	*Phys. 52*, Mag. and Elec.	2
Phys. 51, Mech. and Heat	2	Electives	9
Electives	3		

SENIOR YEAR.

First Semester.		Second Semester.	
Chem. 75 or 77	4	*Chem. 76 or 78*	3
Chem. 83a	4	*Chem. 84*	5
Electives	9	Electives	9

ENGINEERING DIVISION.

Electrical and Mechanical Engineering Courses.*

FRESHMAN YEAR.

First Semester.	Credit Hours	Second Semester.	Credit Hours
Chem. 51, Inor. Chem.	3	*Chem. 52*, Inor. Chem.	3
Draw. 51, Eng. Draw.	2	*Chem. 54*, Qual. Anal. Lab.	3
Eng. 51, Comp. and Rhetoric	3	*Draw. 52*, Mech. Draw.	3
Math. 3, Col. Algebra	3	*Math. 2*, Anal. Geom.	3
Math. 1, Trig.	3	*Math. 4*, Calculus	3
Shop 51	2	*Mil. Art 2*	2
Mil. Art 1	2		

SOPHOMORE YEAR.

First Semester		Second Semester.	
Engl. 52, Comp. and Rhetoric	3	*M. E. 74*, Kinematics of Mach.	2
Draw. 53, Desc. Geom.	3	*Math. 6*, Calculus	3
Math. 5, Calculus	3	*M. E. 52*, Mechanics of Eng.	3
Phys. 53, General Physics	6	*Phys. 54*, General Physics	6
Shop 57, Forging	2	*Shop 52*, Mach. Work	2
Mil. Art 3	2	*Mil. Art 4*	2

JUNIOR YEAR.

First Semester.		Second Semester.	
E. E. 1, Dynamo Elec. Mach.	4	*E. E. 2*, Dynamo Elec. Mach.	4
M. E. 69, Mech. of Eng.	5	*M. E. 64*, Mach. Design	4
M. E. 59, Mech. Lab.	2	*M. E. 60*, Mech. Lab.	2
M. E. 63, Mat'ls of Constr.	2	*M. E. 62*, Hydraulics	3
M. E. 77, Valve Gear and Boiler Design	2	*M. E. 58*, Thermo.	3
Shop 63, Mach. Work	2	*Shop 64*	2
Electives	2	Electives	1

SENIOR YEAR, ELECTRICAL ENGINEERING.

First Semester.		Second Semester.	
E. E. 11, Elec. Eng. Prac.	4	*E. E. 12*, Elec. Eng. Prac.	4
E. E. 15, Elec. Lab.	3	*E. E. 14*, Elec. Railways	2
M. E. 73, Power Plant Eng.	4	*E. E. 16*, Elec. Lab.	3
M. E. 65, Mech. Lab.	2	*E. E. 24*, Design of Elec. Machinery	2
E. E. 27, Constr. and Spec.	1	*E. E. 26*, Illuminating Eng.	2
Electives	5	Electives	3

SENIOR YEAR, MECHANICAL ENGINEERING.

First Semester.		Second Semester.	
E. E. 27, Contr. and Spec.	1	*E. E. 12*, E. E. Prac.	4
M. E. 73, Powr. Plt. Eng.	4	*Math. 14*, Surveying	3
M. E. 65, Mech. Lab.	2	*M. E. 66*, Mech. Lab.	3
M. E. 79, Htng. and Vent.	4	*M. E. 68*, Design	3
Shop 69, Wood Work	2	*M. E. 78*, Ind. Eng.	3
Electives	6	Electives	3

* Students desiring to continue either electrical or mechanical engineering will be required to receive a mark of 70 or more in Mathematics 1 and Mathematics 3 given the first semester of the freshman year.

Elections for Electrical and Mechanical Engineering.

First Semester.	Credit Hours	Second Semester.	Credit Hours
E. E. 3, Tel. and Tel.	1	*E. E. 30*, Problems	1
Econ. 13, Accounting	3	*Eng. 56*, Public Speaking	3
Econ. 1, El. Econ.	3	*Psych. 52*, Intro. of Psych.	3
Pol. Sci. 3, Amer. Const. Law	3	*Soc. 52*, Social Pathology	3
Math. 7, Diff. Equations	3	*Econ. 4*, Money and Banking	3
Math. 9, Theory of Equation	3	*Econ. 6*, Pub. Fin. and Tax'n.	3
Math. 11, Adv. Anal. Geom.	3	*Econ. 14*, Cost Accounting	3
Mil. Art 5	2	*Econ. 2*, Geog. of Commerce	3
Mil. Art 7	2	*Pol. Sci. 2*, Law of Bus.	3
		Mil. Art 6	2
		Mil. Art 8	2
		Math. 8, Adv. Calculus	3
		Math. 12, Adv. Anal. Geom.	3

Chemical Engineering Course.

FRESHMAN YEAR.

First Semester.		Second Semester.	
Chem. 51, Inor. Chem.	3	*Chem. 52*, Inor. Chem.	3
Draw. 51, Eng. Draw.	2	*Chem. 54*, Qual. Anal.	3
Engl. 51, Comp. and Rhet.	3	*Fr. 2*, El. Fr., *or* / *Ger. 2*, El. Ger.	3
Fr. 1, El. Fr., *or* / *Ger. 1*, El. Germ.	3	*Math. 2*, Anal. Geom.	3
Math. 1, Trig.	3	*Math. 4*, Calculus	3
Mil. Art 1	2	*Mil. Art 2*	
Math. 3, Algebra	3		

SOPHOMORE YEAR.

First Semester.		Second Semester.	
Chem. 61, Qual. Anal.	$1\frac{1}{4}$	*Chem. 66*, Quant. Anal.	5
Chem. 65, Quant. Anal.	$4\frac{3}{4}$	*Chem. 68*, Org. Chem.	3
Chem. 67, Org. Chem.	2	*Min. 54*, Min.	2
Engl. 52	3	*Ger. 16*, Prose	3
Ger. 3, Prose	3	*Math. 6*, Calculus	3
Math. 5, Calculus	3	*Mil. Art 4*	2
Mil. Art 3	2		

JUNIOR YEAR.

First Semester.		Second Semester.	
Chem. 71, Org. Chem. Lab.	3	*Chem. 74*, Adv. Quant. Anal.	5
Chem. 73, Adv. Quant. Anal.	4	*Chem. 76*, Phys. and Elec. Chem., *or* / *Chem. 78*, Ind. Chem. / *Chem. 80*, Met.	3
Chem. 75, Phys. Chem., *or* / *Chem. 77*, Adv. Inor. Chem.	3	*Phys. 54*, General Physics	6
Phys. 53, General Physics	6	*Shop 68*, Mach. Work	2
Electives	3	Electives	3

SENIOR YEAR.

First Semester.	Credit Hours	Second Semester.	Credit Hours
Chem. 75, Phys. Chem., *or* *Chem. 77*, Adv. Inorg. Chem.	4	*Chem. 76*, Phys. and Electrochem., *or* *Chem. 78*, Ind. Chem. *Chem. 80*, Met.	3
Chem. 83, Adv. Quant. Lab.	6	*Chem. 84*, Thesis	8
E. E. 21, Mat. of Const.	3	*E. E. 22*, Ind. Elec.	3
M. E. 63, Mat. of Const.	2	*M. E. 58*, Ther.	2
Electives	3	Electives	3

Chemical Engineering Electives.

Bot. 55, Bacteriology	3	*Bot. 56*, Bacteriology	3
Econ. 1, El. Econ.	3	*Econ. 4*, Money and Banking	3
Econ. 9, Corporation Finance	2	*Econ. 6*, Public Finance	3
Engl. 63, Writing for Publication	3	*Engl. 56*, Argumentation	3
Math. 7, Diff. Eq.	3	*Draw. 52*, Machine Draw.	3
Math. 9, Th. of Eq.	3	*Math. 8*, Adv. Calculus	3
Math. 11, Adv. Anal. Geom.	3	*Math. 12*, Adv. Anal. Geom.	3
Mil. Art 5	2	*Mil. Art 6*	2
Mil. Art 7	2	*Mil. Art 8*	2
Sociol. 51	3	*Psych. 52*	3
		Sociol. 52	3
		Sociol. 54	3
		Sociol. 58	3

Architectural, Electrical and Mechanical Construction Courses.

FRESHMAN YEAR.

First Semester.		Second Semester.	
Chem. 51, Inor. Chem.	3	*Chem. 52*, Inor. Chem.	3
Draw. 51, Eng. Draw.	2	*Chem. 54*, Qual. Anal. Lab.	3
Engl. 51, Comp. and Rhet.	3	*Draw. 52*, Mach. Draw. Lab.	3
Math. 1, Trig.	3	*Math. 102*, Shop. Math.	3
Math. 3, Coll. Algebra	3	*Math. 104*, Prac. Math.	3
Shop. 51, Wood Work	2	*Shop. 52*, Wood Work	2
Mil. Art, 1	2	*Mil. Art 2*	2

SOPHOMORE YEAR.

First Semester.		Second Semester.	
Draw. 53, Descr. Geom.	3	*Draw. 64*, Free hand	2
Engl. 52, Comp. Rhet.	3	*Draw. 102*, Elem. of Architecture	2
Econ. 13, Accounting	3	*Econ. 14*, Cost Accounting	3
Phys. 51, Mech. and Heat.	2	*M.E. 102*, Mechanics	3
Shop. 101, Pattern making *or* *Shop. 59*, Wood Work	3	*Phys. 52*, Mag. and Elec.	2
Mil. Art 3	2	*Shop. 66*, Forge Work, *or* *Shop. 60*, Wood Work	3
		Mil. Art 4	2

Architectural Construction Course.

JUNIOR YEAR.

First Semester.	Credit Hours	Second Semester.	Credit Hours
Draw. 65, Arch. Draw.	2	*Draw. 104*, Building Const.	3
E. E. 101, Elem. Elec. Const.	3	*Draw. 66*, Arch. Draw.	2
M. E. 63, Mater. of Const.	2	*E. E. 102*, D. C. and A. C. Appa.	3
M. E. 103, Mechanics	3	*Phys. 102*, Heat. and Vent. Plumb. and Elec. Appli.	3
M. E. 105, Lab.	1	Electives	6
Electives	6		

SENIOR YEAR.

First Semester.		Second Semester.	
Draw. 105, Build. Const. and Design	7	*Draw. 108*, Architectural Thesis	6
Draw. 107, Cont. and Spec.	1	*Math. 14*, Surveying	3
M. E. 79, Heat. and Vent.	4	*M. E. 78*, Ind. Eng.	3
Electives	6	Electives	6

Electrical and Mechanical Construction Courses.

JUNIOR YEAR.

First Semester.		Second Semester.	
E. E. 101, Elem. Elec. Const.	3	*E. E. 102*, D. C. and A. C. Appa.	3
M. E. 63, Mater of Const.	2	*M. E. 104*, Boilers and Engines	3
M. E. 103, Mechanics	3	*M. E. 108*, Machine Design	2
M. E. 105, Lab.	1	*M. E. 106*, Lab	2
M. E. 109, Boiler Design and Graphics	2	*Shop. 64*, Machine Work	2
Shop. 63, Machine Work	2	Elective	6
Elective	6		

SENIOR YEAR.

First Semester.		Second Semester.	
E. E. 103, Elec. Mach, *or* *M. E. 79*, Heat and Vent.	4	*E. E. 106*, Elec. Lab., *or* *M. E. 78*, Ind. Eng.	3
E. E. 105, Elec Lab., *or* *M. E. 111*, Mech. Lab.	2	*E. E. 108*, Power Plant Design	2
E. E. 107, Elec. Design	3	*M. E. 68*, Power Plant Design	3
E. E. 27, Cont. and Spec.	1	*Math. 14*, Surveying	3
M. E. 113, Hydraulics	2	Electives	6
Electives	6		

Electives.

First Semester		Second Semester.	
Econ. 1, Elem. of Econ.	3	*Econ. 6*, Pub. Fin. and Tax.	3
E. E. 3, Tel. and Tel.	1	*Econ. 4*, Money and Banking	3
Engl. 63, Writing for Pub.	3	*Econ. 2*, Geog. of Com.	3
For. 53, Dendrology	3	*Engl. 56*, Public Speaking	3
Hist. 5, Amer. History	3	*Hist. 6*, Amer. History	3
Pol. Sci. 3, Amer. Const. Law	3	*Pol. Sci. 2*, Laws of Business	3
Psych. 51, General Psych.	3	*Soci. 52*, Pathology	3
Mil. Art 5	2	*Mil. Art 6*	2
Mil. Art 7	2	*Mil. Art 8*	2

DESCRIPTION OF STUDIES.

Each department is given in capital letters, arranged alphabetically and followed b the professors and instructors connected with it. The number of each individual sub ject is followed by the name of the instructor who gives it, and the room and building i which the class will meet. Abbreviations for the buildings are as follows: C. H.—Conant Hall; D. H.—DeMeritt Hall; Lib.—Library; M. H.—Morrill Hall; N. H.—Nesmith Hall; T. H.—Thompson Hall.

Following the description of each subject will be found the prerequisites, if any, an the nature and number of the meetings of the class per week. Except in drill and phy sical culture, the number of hours of credit each subject will count toward graduatio will be equal to the number of meetings of the class per week. The following abbrevia tions tell the nature of the exercise: Lec.—lecture; Rec.—recitation; each of whic are one hour in length; and Lab.—laboratory, two and one-half hours long.

An elective subject will be given only when there is a sufficient number of student taking the same.

AGRICULTURE.

DEAN OF DIVISION AND HEADS OF DEPARTMENTS.

1. Survey of Agriculture. Prof. Taylor. 110 M.H

A brief history of agriculture as a business and scientific profession i this country; a general discussion and survey of the various branches o agriculture and the opportunities for work which each affords. Th subject is intended primarily to assist the student in selecting his tech nical subjects in the later years of his college course. For Agricultura Freshmen. *1 Lec. per week. 1st S*

2. Methods of Teaching. Mr. Young. 110 M.H

In this subject will be included a discussion of the ways and means o presenting the subject-matter of the various phases of agriculture to th pupils in secondary schools; the handling of pupil projects, the organ ization and operation of a farm and the relation of school agriculture t the farming of the community. Four to six weeks of practice teaching *3 Lec. per week. 2d S*

AGRONOMY.

PROF. TAYLOR, ASST. PROF. PRINCE, MR. YOUNG.

51. Agricultural Engineering. Prof. Taylor. 110 M.H

Lectures and recitations upon the mapping of farms; fencing; drain age; farm sanitation; tillage and harvesting machinery; concrete con struction; silos; farm motors; roads and principles of draft. Practica work in map making, laying out drains, rope splicing, comparing farn machines, etc. For Agricultural Sophomores.

2 Lec., 1 Lab. per week. 1st S

52. Soils. Asst. Prof. Prince. 110 M.H.

Text-book and recitations upon the formation, kinds and physical properties of soils; the movements and conservation of soil moisture; the relation of heat and air to soil; the nature and physical effects of tillage and fertilizers; laboratory work and experimentation with soils to show the physical effects of different conditions and texture. For Agricultural Juniors. *2 Lec., 1 Lab. per week. 2d S.*

53. Field Corps. Asst. Prof. Prince. 110 M.H.

Text-book and recitations upon the history, use, value and methods of culture of our various field crops, including hay and grass, with particular reference to New England conditions. Laboratory practice in judging the different varieties of grains and grasses. For Agricultural Juniors except in Forestry Course. *2 Lec., 1 Lab. per week. 1st S.*

54. Fertilizers. Prof. Taylor. 110 M.H.

Lectures, text-book and recitations upon the principles of fertility and plant nutrition. A study of the value and use of plant food materials, including farm manures. For Agricultural Seniors except in Forestry Course.

Prerequisites—Chemistry 51 and 52. *3 Rec. per week. 2d S.*

55. Farm Management. Mr. Young. 110 M.H.

Text-book, lectures and recitations upon the development of farming as a business, types of farming, size of farms, cropping systems, live stock problems, marketing farm products, and choosing and buying a farm. Practical work will be given in laying out farms; studying survey records of individual farms to find the labor income; also analyzing the farm business record to determine the effect of efficiency factors on the profits made. Exercises will be given in farm building arrangements, distribution of labor throughout the year, and taking survey record of the home farm. For Agricultural Seniors, except in Forestry Course.

Prerequisite—Agronomy 51. *2 Lec., 1 Lab. per week. 1st S.*

56. Special Agronomy. Prof. Taylor. 110 M.H.

Advanced work for students interested in some particular line. No class exercises. The hours and kind of work must be arranged with the department before the subject is elected. For Agricultural Seniors.

Prerequisite—All preceding subjects in Agronomy except 54.

One to three credit hours. 2d S.

57. Agricultural Seminar. Prof. Taylor. 110 M.H.

Library and reference work, the preparation of bibliographies, a study of the work and history of agricultural colleges and experiment stations. Lectures upon the history of agriculture. Elective for Agricultural Seniors. *2 Lec. per week. 1st S.*

58. Farm Cost Accounting. Mr. Young. 110 M.H

Lectures on the principles of cost accounting as applied to farming, including business forms, and certain legal aspects of farming as a business. Laboratory exercises include the study of inventories, accounts with single enterprises and set of complete cost accounts taken from actual farms.

For Agricultural Juniors. *1 Lec., 1 Lab. per week. 2d S*

ANIMAL HUSBANDRY.

PROF. ECKMAN, MR. FAWCETT.

51. Types and Breeds of Live Stock. Mr. Fawcett. 105 M.H

A study of the different breeds of horses, cattle, sheep, and swine in respect to their origin, history, development, characteristics, and adaptability to different conditions of climate and soil. One afternoon each week is devoted to judging the different breeds. For Agricultural Freshmen. *2 Rec., 1 Lab. per week. 1st S*

52. Live Stock Judging. Mr. Fawcett. 105 M.H

The work consists of a study of the principles and practice of judging horses, beef cattle, sheep, and swine, and of the market classes and grades of horses and meat animals. Students intending to compete for the live stock judging team should elect this subject. For laboratory work trips are taken to some of the best breeding establishments in New England. Required of students in the Teacher Training Course. Elective for other Agricultural students.

Prerequisite—Animal Husbandry 51. *2 Rec. per week. 2d S*

54. Feeds and Feeding. Mr. Fawcett. 105 M.H

An elementary study of the laws of nutrition, the character, composition, and digestibility of feed stuffs and methods of feeding different kinds of farm animals. Numerous samples of grains and by-products are used for the purpose of familiarizing the students with the different feed stuffs. Practice is given in calculating rations for various purposes For Agricultural Juniors in Animal Husbandry and Dairying, and Teacher Training Courses. Elective for others.

Prerequisites—Chemistry 51 and 52. *2 Rec., 1 Lab. per week. 2d S*

55. Anatomy of Farm Animals. Prof. Eckman. 105 M.H

Lectures and recitations upon the form and structure of the domesticated animals. Skeletons, various anatomical specimens, models, charts and lantern slides are used to make the subject as practical as possible The purposes of this subject are to show the relation between the skeleton and the form and function of the animal and to serve as a foundation for the intelligent study of animal diseases and ailments. For Animal Husbandry Juniors. Elective for others. *3 Rec. per week. 1st S*

56. **Infectious Diseases of Animals.** Prof. Eckman. 105 M.H.

A study of the more common economic infectious diseases of farm animals, their prevention and treatment and general sanitation. For Animal Husbandry Juniors. Elective for others.

Prerequisite—Animal Husbandry 55. *3 Rec. per week. 2d S.*

57. **Animal Breeding.** Prof. Eckman. 105 M.H.

A study of the principles and practices of breeding farm animals. Practice is given in studying and tracing out pedigrees. For Seniors in Animal Husbandry and Dairy and Teacher Training Courses. Elective for others.

Prerequisite—Animal Husbandry 51. *2 Rec., 1 Lab. per week. 1st S.*

58. **Management of Horses and Beef Cattle.** Prof. Eckman. 105 M.H.

Lectures and recitations upon the care of brood mares and cows, management of stallions and bulls, the breaking and training of colts, preparation of animals for the show ring, the management of pure bred beef herds, and the feeding and handling of steers and oxen. Elective for Agricultural Seniors.

Prerequisites—Animal Husbandry 51 and 54. *3 Rec. per week. 2d S.*

53. **Non-infectious Diseases and Ailments.** Prof. Eckman. 105 M.H.

A study of the common non-infectious diseases and ailments of farm animals and their treatment; unsoundness of the horse, horseshoeing, and the practice of simple surgical operations. Elective for Agricultural Seniors.

Prerequisite—Animal Husbandry 55. *3 Rec. per week. 1st S.*

5. **Live Stock Markets and Products.** Mr. Fawcett. 105 M.H.

A study of the various kinds of live stock markets and of the methods and regulations applying to the transportation of live stock. Some time will be spent in a study of the live stock centers, the stock yards, and the government inspection of animals before and after slaughter. The various cuts of meats, and butchering of animals on the farm will be discussed. References will be supplied the student for individual work. Occasional trips will be taken to slaughter houses and packing-plants. Elective for Agricultural Seniors.

Prerequisite—Animal Husbandry 52. *3 Rec. per week. 1st S.*

7. **Sheep and Swine Husbandry.** Mr. Fawcett. 105 M.H.

A consideration of the judging, breeding, feeding, management and preparation for the show ring of sheep and swine with special reference to New Hampshire conditions. Elective for Agricultural seniors.

Prerequisites—Animal Husbandry 51 and 54. *3 Rec. per week. 1st S.*

8. **Animal Nutrition.** Prof. Eckman. 105 M.H.

An advanced consideration of the subject of digestion, absorption and assimilation; a study of the relationship of various feeding stuffs to

nutrition, their composition and digestibility, and their function in metabolism. Elective for Agricultural Seniors.

Prerequisite—Animal Husbandry 54. *3 Rec. per week.* *2d S*

ASTRONOMY.

PROF. PETTEE.

2. Astronomy. Prof. Pettee. 102 T.H

A short culture subject designed to give the student a simple explanation of the many phenomena constantly exhibiting themselves in the universe and to acquaint him with the present state of astronomic science Elective for Arts and Science Juniors and Seniors.

2 Rec. per week. *2d S*

BOTANY.

PROF. BUTLER, ——— MR. LAIRD.

51. General Botany. Mr. Laird. 206 N.H

Morphology and histology of plants. For Agricultural Freshmen Elective for other students. Given in two sections.

1 Lec., 2 Lab. per week. *1st S*

52. General Botany. Mr. Laird. 206 N.H

Organography and classification of plants. For Agricultural Freshmen. Elective for other students. Given in two sections.

Prerequisite—Botany 51. *1 Lec., 2 Lab. per week.* *2d S*

53. Plant Physiology. ————. 202 N.H

Structure and properties of the cell, absorption and movement of water; metabolism; growth and irritability. For Forestry, and Horticultural Juniors. Elective for others.

Prerequisites—Botany 51 and 52. *1 Lec., 2 Lab. per week.* *1st S*

54. Plant Histology. Mr. Laird. 206 N.H

Technique, characterization and differentiation of plant tissues Comparative histology. For Forestry Juniors Elective for others.

Prerequisites—Botany 51 and 52. *3 Lab. per week.* *2d S*

55. General Bacteriology. ————. 206 N. H

Lectures on the morphology and physiology of the bacteria, the principal bacterial diseases, the rôle of bacteria in the arts and industries For Agriculture and Home Economics Juniors. Elective for others.

3 Lec. per week. *1st S*

56. Bacteriology. ————. 202 N.H

Technique. Morphology and biology of the principal non-pathogenic and pathogenic bacteria.

Prerequisite—Botany 55. *3 Lab. per week.* *2d S*

57. Plant Pathology. ————. 206 N.H.

Fungous Diseases of plants, their symptoms, cause and prevention. For Forestry and Horticultural Seniors. Elective for others.

Prerequisite—Botany 53. *1 Lec., 2 Lab. per week. 1st S.*

58. Mycology. ————. 202 N.H.

Morphology and biology of the fungi. For advanced students.

Prerequisite—Botany 57. *2 Lab. per week. 2d S.*

59. Embryology. ————. 202 N.H.

Technique. Origin and development of the embryo. For advanced students.

Prerequisite—Botany 53. *2 Lab. per week. 1st S.*

60. Advanced Botany. Prof. Butler. 202 N.H.

For advanced students. Prerequisites will depend on the nature of the subject selected for study.

Credit and hours by arrangement. 2d S.

61. Advanced Botany. Prof. Butler. 202 N.H.

For advanced students. Prerequisites will depend on the nature of the subject selected for study.

Credit and hours by arrangement. 1st S.

62. Fungous Diseases of Plants. Mr. Laird. 206 N.H.

The principal fungous diseases, their cure and prevention. The course is designed to give the student such training in the identification of the common fungous maladies of our agricultural crops as will be serviceable in farming, school garden work, or any position in the field of plant industry in which elementary knowledge is sufficient or desirable.

No prerequisites. *1 Lec., 1 Lab. per week. 2d S.*

CHEMISTRY.

PROF. JAMES, ASSOC. PROF. PERLEY,* ASST. PROF. STEWART, MR. SMITH, AND MR. ————.

51. Inorganic Chemistry. { I. Prof. James. 109 C.H. / II. Mr. Smith. 204 C.H. }

Lectures and recitations on general and theoretical chemistry, illustrated by experiments, charts, specimens, lantern views, etc. Solution of chemical problems will be required. For Agricultural and Engineering Freshmen. Elective for other Freshmen.

2 Lec. and 1 Rec. per week. 1st S.

* On leave of absence.

52. Inorganic Chemistry. { I. Prof. James. 109 C.H
II. Mr. Smith. 204 C.H

A continuation of Chemistry 51, but the time will be mainly spent o the metallic elements, their metallurgy, salts, etc.

Prerequisite—Chemistry 51. *2 Lec. and 1 Rec. per week.* *2d S*

54. Qualitative Analysis. Mr. Smith. 201 C.H

Laboratory practice, with occasional lectures and recitations. Th student is expected to become proficient in the separation and detectio of the common acids and bases and to keep a full set of notes. Fo Engineering Freshmen and elective for Arts and Science students, roon permitting.

Prerequisite—Chemistry 51. *3 Lab. Periods per week.* *2d S*

55. Inorganic Chemistry. Mr. Smith. 204 C.H

Similar to Chemistry 51. For Home Economics Freshmen.

3 Rec., 1 Lab. per week. *1st S*

56. Inorganic Chemistry. Mr. Smith. 204 C.H

A continuation of Chemistry 55 and similar to Chemistry 52.

Prerequisite—Chemistry 55. *3 Rec. per week.* *2d S*

57. Organic Chemistry. Mr. ———. 109 C.H

A study of the more important organic compounds from the view point of the Home Economics student. For Home Economics Sopho mores.

Prerequisites—Chemistry 55 and 56. *3 Rec. per week.* *1st S*

59. Introductory Qualitative Analysis. Mr. Smith. 201 C.H

Introduction to qualitative analysis specially arranged for Agricul tural students. For Agricultural and Mechanic Arts Sophomores.

Prerequisite—Chemistry 51. *2 Lab. per week.* *1st S*

59a. Qualitative Analysis. Mr. Smith. 201 C.H

Similar to Chemistry 54. Elective for Arts and Science students.

Prerequisite—Chemistry 51. *3 Lab. per week.* *1st S*

60. Quantitative Analysis. Asst. Prof. Stewart. 201 C.H

Introduction to quantitative analysis, consisting of the analyses o simple compounds and materials such as feeds, fertilizers, soils, water etc. For Agricultural Sophomores.

Prerequisites—Chemistry 51, 52 and 59. *3 Lab. Periods per week.* *2d S*

61. Qualitative Analysis. Mr. Smith. 201 C.H

Advanced work for Chemical Sophomores on insoluble substances an the rarer elements, to precede Chemistry 65.

20 Lab. exercises. *1st S*

65. Quantitative Analysis. Asst. Prof. Stewart. 103, 205 C.H.

A preliminary study of quantitative analysis to familiarize the student with the general methods of chemical manipulation and analysis. For Chemical Sophomores. Elective for Arts and Science Sophomores, Juniors and Seniors, provided laboratory facilities permit.

Prerequisites—Mathematics 2, German 1 and 2, Chemistry 54.

4¾ Lab. per week. 1st S.

66. Quantitative Analysis. Asst. Prof. Stewart. 103, 205 C.H.

A continuation of Chemistry 65. For Chemical Sophomores.

5 Lab. per week. 2d S.

67. Organic Chemistry. Prof. James. 109 C.H.

Lectures and recitations. A study of the chemistry of the carbon compounds. For Chemical Sophomores. Elective for Arts and Science students.

Prerequisites—Chemistry 51 and 52. *2 Lec. per week. 1st S.*

68. Organic Chemistry. Prof. James. 109 C.H.

A continuation of Chemistry 67. For Chemical Sophomores. Elective for Arts and Science students.

Prerequisite—Chemistry 67. *3 Lec. per week. 2d S.*

69. Household Chemistry. Prof. James. 109 C.H.

Treats of the chemistry of foods, beverages, baking chemicals, preservatives and detergents.

For Home Economics Juniors and 1918 Seniors.

Prerequisites—Chemistry 54 and 55. *1 Lec., 2 Lab. per week. 1st S.*

71. Organic Chemical Laboratory. Prof. James. 205 C.H.

Consists mainly of laboratory practice in preparing and purifying organic compounds. Lectures and recitations will be held from time to time in connection with the practice. For Chemical Juniors. Elective for Arts and Science students.

Prerequisite—Chemistry 68. *3 Lab. per week. 1st S.*

73. Advanced Quantitative Analysis.

Asst. Prof. Stewart. 205–103 C.H.

This subject will be made to fit the end which each student has in view and will be largely an individual one. For those students desiring to specialize in agricultural and food chemistry the analysis made will tend in the main toward agricultural products, fertilizers, mucks, marls, manures, dairy products, waters, foodstuffs, sugars, etc. For the student wishing to enter metallurgical works, the analyses will be in the main upon iron and steel and other metals, ores, limestones, slags, alloys, fuels, etc. As a preparation for the study of medicine, work will be done on poisons, drugs, foods, urine, etc. Other lines will be arranged to

meet the wants of the individual student. Each student will be given some practice in all of the branches of agricultural, metallurgical, medical, sanitary and industrial chemistry, in order to lay a foundation for any future work which may be required of him. A short study in gas and oil analysis will also be provided. For Chemical Juniors.

Prerequisite—Chemistry 65. *4 Lab. per week. 1st S.*

74. Advanced Quantitative Analysis.

Asst. Prof. Stewart. 205–103 C.H.

A continuation of Chemistry 73. For Chemical Juniors.

5 Lab. per week. 2d S.

75. Physical Chemistry. Mr. Smith. 204 C.H.

Advanced study of chemical theory. Practical experiments will be performed with the aid of the student, in the determination of vapor density, molecular weights, specific heat, etc.; and the study of isomorphism, diffusion of gases, solutions, ionization, electrolysis, molecular and atomic volume, thermo chemistry, equilibrium, the phase rule, etc., will take up much of the time. For Chemical Juniors or Seniors. Elective for Arts and Science students.

Prerequisites—Chemistry 51 and 52. *3 Rec., 1 Lab. per week. 1st S.*

76. Physical and Electro Chemistry, Lectures.

Mr. Smith. 204 C. H.

A continuation of Chemistry 75. For Chemical Juniors or Seniors. Elective for Arts and Science students. *3 Lec. per week. 2d S.*

77. Advanced Inorganic Chemistry. Prof. James. 109 C.H.

Advanced study of the elements and their compounds. For Chemical Juniors and Seniors. Elective for Arts and Science students.

Prerequisites—Chemistry 51 and 52. *3 Rec., 1 Lab. per week. 1st S.*

78. Industrial Chemistry. Prof. James. 109 C.H.

Lectures on chemical manufactures, such as sugar, sodium carbonate, fertilizers, sulphuric acid, glass, matches, paints, dyes, soaps, illuminating gas, petroleum, the processes employed in the smelting of ores, of iron, lead, copper, zinc, silver, gold, etc., and the methods used in refining these metals. The lectures are illustrated by stereopticon and by specimens of products. Trips to the leading New England cities to examine important chemical manufactures will be taken as far as practicable. For Chemical Juniors or Seniors. Elective for Arts and Science students.

Prerequisites—Chemistry 51 and 52. *3 Lec. per week. 2d S.*

83. Advanced Quantitative Laboratory.

Prof. James, Asst. Prof. Stewart. Research Rooms.

Especially arranged for students of the Chemical Engineering Course. May merge at any time into 84 and will usually do so about the middle of the first semester. For Chemical Seniors.

6 Lab. per week. 1st S.

84. Thesis. (Chemical Research.) Prof. James. Research Rooms.

The work of the last semester of the Chemical Engineering Course is given up to the special study of some selected subject in any branch of chemical science and the student is required to present a thesis showing him to be a careful manipulator and a person of independent thought. *8 Lab. per week. 2d S.*

DAIRY HUSBANDRY.

PROF. FULLER, MR. DEPEW, MR. ———.

51. Domestic Dairying. Mr. DePew. D.B.

Nutritive value of milk; market milk; modified milk; certified milk; condensed milk; milk powder; fermented milk; butter, cheese, and ice cream. Laboratory exercises are given in the manufacture of dairy products. Elective for Home Economics and Arts and Science Juniors and Seniors. *2 Lec., 1 Lab. per week. 1st S.*

52. Farm Dairying. Prof. Fuller. D.B.

A general consideration of main problems confronting those who are more or less interested in dairy farming. Such topics as choice of a breed, feeding and management of dairy cattle, marketing products, use of Babcock test, farm separators, farm butter and cheesemaking will be included. Required of all sophomore agricultural students. *2 Lec., 1 Lab. per week. 2d S.*

53. Buttermaking. Prof. Fuller. D.B.

A study of the secretion and of the chemical and physical properties of milk; pasteurization, cream ripening, starters, churning; organization and operation of factories. For Animal and Dairy Husbandry Juniors. Elective for other students.

Prerequisite—Farm Dairying 52. 2 Lec., 1 Lab. per week. 1st S.

54. Market Milk. Prof. Fuller. D.B.

Food value of milk; milk in relation to diseases; production and handling of market and certified milk; dairy farm inspection; transportation of milk; the milk contractor; control of public milk supply. Required of Animal and Dairy Husbandry, and Teacher Training Juniors. Elective for all other students. *2 Lec., 1 Lab. per week. 2d S.*

57. Dairy Bacteriology. Mr. DePew. D.B.

Methods of bacteriological analysis of milk and its products; isolation and study of the different types of dairy bacteria; relation of bacteria to milk and its products; study of effect of separation, clarification, pasteurization, aeration, and straining on bacteria in milk; and the application of bacteriological principles to the dairy industry. Elective for Animal Husbandry and Dairy Seniors.

Prerequisite—Botany 56. 1 Lec., 2 Lab. per week. 1st S.

64. Dairy Research. Prof. Fuller. D.B.

A study of experiment station and other dairy literature. Elective. *Prerequisite—6 credit hours in Dairy Husbandry.*

1 Rec., per week. 2d S.

65. Dairy Cattle Judging. Prof. Fuller. D.B.

The object of this study is to emphasize the relation of form to function. Comparative judging of Ayrshires, Holsteins, Guernseys and Jerseys of the college herd. Nearby herds will be visited. Elective for agricultural students. One hour credit. *1 Lab. per week.*

66. Ice Cream and Cheesemaking. Mr. DePew. D.B.

(1) Lectures and laboratory work covering the manufacture of the more important types of cheese. (2) The making, handling and marketing of ice cream and ices. Elective. *2 Lec., 1 Lab. per week. 2d S.*

68. Milk Production. Prof. Fuller. D.B.

The field of dairy husbandry in its relation to the producer. The feeding of dairy cattle; selection of feeds; systems of herd feeding; silage and soiling; raising the dairy calf; care and development of the dairy heifer; dairy herd development; dairy barns; advanced registry management; fitting dairy animals for show. *2 Lec., 1 Lab. per week. 2d S.*

DRAWING.

PROF. HUDDLESTON, MR. LATON.

These subjects are of an industrial and cultural nature and include the mathematical, architectural and free-hand branches of the subject.

Recitation or lecture requires one hour in the class room with assigned work to be done outside. Drawing period requires a minimum of two and one-half hours in the drafting room.

Partial credit may be given for work done in preparatory schools if the work is satisfactory to the department. In order to get credit the student must submit for examination the work done in the preparatory school. No college credit will be given for work submitted for entrance.

Students are advised not to purchase drawing materials before consultation with the drawing instructor. Instruments will be loaned to students upon deposit of $5.00.

51. Engineering Drawing Mr. Laton. 3–52 D.H.

A subject devoted to the fundamentals of engineering drawing and includes free-hand lettering; the use of drawing instruments; inking; tracing; orthographic projection as a study of the relation of different views of an object; and isometric and oblique projection as a study in the pictorial representation of an object. Text used is "Engineering

Drawing" by French. For Engineering and Mechanic Arts Freshmen. *2 Drawing periods per week. 1st S.*

52. Machine Drawing. Mr. Laton. 3–52 D.H.

Detail and assembly drawing of machines and machine parts; making of blue-prints; instruction in drafting room practice and standards with a brief study of cams and gears. For Electrical, Mechanical and Mechanic Arts Freshmen.

Prerequisite—Drawing 51. *3 Drawing periods per week. 2d S.*

53. Descriptive Geometry. Mr. Laton. 3–52 D.H.

An application of the principles of descriptive geometry to the solution of problems in points, lines, planes and solids. For Electrical, Mechanical and Mechanic Arts Sophomores.

Prerequisites—Drawing 51 and Mathematics 1 and 3.

1 Lec.; 2 Drawing periods per week. 1st S.

54. Agricultural Drawing. Mr. Laton. 3–52 D.H.

Instruction in this subject includes drafting room exercises in free-hand lettering; the use of drawing instruments; projection drawing as a study of the relation of different views of a given object or structure; isometric drawing as a study in pictorial representation; together with the drawing of plans and elevations of simple farm structures. For Agricultural Freshmen. *2 Drawing periods per week. 2d S.*

63. Free-hand Drawing. Prof. Huddleston. 3–55 D.H.

Pencil drawing from geometrical models as a study of proportion, form and free-hand perspective, followed by pencil sketching and rendering from plaster casts of historic ornament. Elective for all students.

2 Drawing periods per week. 1st S.

63a. Advanced Free-hand Drawing. Prof. Huddleston. 3–55 D.H.

Charcoal drawing from the antique with special work to meet the needs of the students in pen and ink sketching and rendering, and modeling in clay from relief ornament and sculpture. Elective for all students.

Prerequisite—Drawing 63; 64 or 69.

2 Drawing periods per week. 1st S.

64. Free-hand Drawing. Prof. Huddleston. 3–55 D.H.

For Mechanic Arts Sophomores. Elective for all students.

Same as Drawing 63. *2 Drawing periods per week. 2d S.*

64a. Advanced Free-hand Drawing. Prof. Huddleston. 3–55 D.H.

Elective for all students.

Same as Drawing 63a. *2 Drawing periods per week. 2d S.*

NOTE.—The above subjects of Drawing 63, 63a, 64 and 64a are of special value to students who expect to enter the field of teaching, nature study or biological research and are elective for all students subject to such conditions as their respective divisions and the Head of the department of drawing may prescribe.

65. Architectural Drawing. Prof. Huddleston. 2–39 D.H

A brief study of the orders of architecture and drafting room exercises in architectural representation followed by an analytical study of house plans and modern methods of building construction. For Mechanic Arts Juniors.

Prerequisites—Drawing 51 and Shop 60.

2 Drawing periods per week. 1st S

66. Architectural Drawing. Prof. Huddleston. 2–39 D.H

A continuation of Drawing 65 taking up the study of an individua building problem, making quarter-inch scale working drawings with necessary scale and full size details for a small frame house designed by the student, to conform to specified requirements. For Mechanic Arts Juniors. Elective for all students.

Prerequisite—Drawing 65 or 68. 2 Drawing periods per week. 2d S.

67. Home Economics Drawing. Mr. Laton. 3–52 D.H

Instruction is given in free-hand lettering; the use of drawing instruments; and the rudiments of projection and isometric drawing; and drafting room exercises in architectural representation as a preparation for further study in house-planning. For Home Economics Sophomores

2 Drawing periods per week. 1st S.

68. House-Planning. Prof. Huddleston. 2–39 D.H.

Lectures and recitations devoted to a brief study of the history of domestic architecture; the relation of the house plan to home making; to the individual family; individual site, garden and accessory buildings; and to the community; supplemented by drafting-room exercises devoted to an analytical study of house plans. For Home Economics Sophomores. *1 Lec., 1 Drawing period per week. 2d S.*

69. Free-hand Drawing. Prof. Huddleston. 3–55 D. H.

Pencil drawing from geometrical models as a study of proportion, form and free-hand perspective, followed by pencil sketching and rendering from plaster casts of historic ornament. For Home Economics Juniors. *2 Drawing periods per week. 1st S.*

70. Color and Design. Prof. Huddleston. 3–55 D.H.

The first half of the semester will consist of lectures on color theories, harmonies and qualities based on spectral colors and supplemented with studio work with water-color.

The second half of the semester will consist of lectures on the principles of design, supplemented by studio work of color problems applicable to home decorations and costume design.

The object of this subject is to give to students a working knowledge of color such as will help them to express themselves appropriately in their

clothing as well as develop good taste in color selections for home decoration. For Home Economics Juniors.

Prerequisites—Drawing 63; 64 or 69.

1 Lec.; 1 Drawing period per week. 2d S.

72. Practical Mathematics. Mr. Laton. 2–49 D.H.

The instruction in this subject includes useful applications of algebra, geometry and the first principles of trigonometry and is directly related to practical problems the student will meet after he has finished his course. For Mechanic Arts Seniors.

Prerequisite—Drawing 66. *1 Rec. per week. 1st S.*

102. Elements of Architecture. Prof. Huddleston. 2–39 D.H.

Drafting room exercises in the study of the classic orders of architecture and elementary studies in composition. For Sophomores in Architectural, Electrical and Mechanical Construction.

2 Drawing periods per week. 2d S.

104. Building Construction. Mr. ———. 2–39 D.H.

This subject combines conferences, text-book study and drafting room exercises in a comprehensive study of details of wood, masonry, reinforced concrete and steel construction and their application to modern building construction. For Juniors in Architectural Construction.

3 Drawing periods per week. 2d S.

105. Building Construction and Design.

Prof. Huddleston and Mr. ———. 2–39 D.H.

Graded problems in structural design of buildings in wood, masonry, reinforced concrete and steel. For seniors in Architectural Construction. *7 Drawing periods per week. 1st S.*

107. Contracts and Specifications. Prof. Huddleston. 2–49 D.H.

This subject comprises discussion of the principles and form of building contracts and standard specifications; study of the legal relation of the architect, the owner, and the contractor; state laws concerning the erection of public buildings; labor laws; lien laws; building permits; building insurance; contracts and bonds. For Seniors in Architectural Construction. *1 Lec. per week. 1st S.*

108. Architectural Thesis. Prof. Huddleston and Mr. ———. 2–39 D.H.

A thesis, consisting of a set of original working drawings, complete with details and specifications, for a public building designed to meet certain specified conditions, will be required of each student. This work must be done in the drafting room of the department and under the supervision of the instructor. For Seniors in Architectural Construction. *6 Drawing periods per week. 2d S.*

ECONOMICS.

ASST. PROF. MCKAY, MR. HAM.

1. Elementary Economics. Asst. Prof. McKay. 204 Lit

This subject is designed to introduce the student into the broad fiel of economics; the kind and nature of wealth; its distribution amon producers in the form of rent, wages, interest and profits; the pa played by nature, by labor, and by capital in wealth production; th field of organized labor; the forms and relative advantages of differen types of business organization, including corporations and trusts; th subject of markets and the forces which determine prices; the principle of credit, banking and foreign exchange; the tariff and taxation.

Two sections: one for Agricultural and Engineering Seniors; th other for Arts and Science and Mechanic Arts Sophomores.

1 Lec., 2 Rec. per week. 1st S

2. Geography of Commerce. Asst. Prof. McKay. 201 Lit

This subject gives rather wide information regarding the facts an principles of commerce, and the commercial development of nation The importance of natural physical conditions as determinants of com merce is emphasized, as well as that of transportation and exchang facilities. Ports and ocean trade routes are also considered. The mor important commodities of commerce are studied and the regions of thei production, their markets and prices. Finally a comparison is made c the principal commercial countries of the world. For Arts and Scienc Freshmen and Sophomores. *1 Lec., 2 Rec. per week. 2d S*

4. Money and Banking Asst. Prof. McKay. 204 Lit

A study of the principles of money; coinage and coinage laws; lega tender; the relation of money and prices; bimetallism; the kinds c banks and the services they render; the national banking systems c this and other countries, including our new Federal Reserve Systen Elective for Arts and Science Juniors and Seniors and for Agricultura and Engineering Seniors.

Economics 4 and 6 are given in alternate years. Economics 4 wi be given in 1918–1919.

Prerequisite—Economics 1. *2 Lec., 1 Rec. per week. 2d S*

5. Labor Problems. Asst. Prof. McKay. 204 Lit

This subject is concerned primarily with the problems of organize labor; strikes and their causes, lock-outs, boycotts, the open and close shop, minimum wage, settlement of disputes by arbitration and othe means; compensation for industrial accidents, and labor legislatior Some attention is given in this subject to such organizations as th American Federation of Labor and the Industrial Workers of the Worl

their ideals, aims and methods. Elective for Arts and Science Juniors and Seniors and Agricultural Seniors.

Economics 5 and 9 are given in alternate years. Economics 5 will be given in 1918–1919.

Prerequisite—Economics 1. *2 Lec., 1 Rec. per week. 1st S.*

6. Public Finance and Taxation. Asst. Prof. McKay. 204 Lib.

The subject-matter has to do with the costs of conducting governments, the methods of raising the necessary funds, including the great problems of taxation, the kinds of taxes, and the way they are distributed. Property, income and inheritance taxes, tariffs and internal revenue duties, the single tax and progressive taxes are considered. Elective for Arts and Science Juniors and Seniors and Agricultural and Engineering Seniors.

Economics 4 and 6 are given in alternate years. Economics 4 will be given in 1918–1919.

Prerequisite—Economics 1. *1 Lec., 2 Rec. per week. 2d S.*

8. Agricultural Economics. Asst. Prof. McKay. 204 Lib.

Economic problems in agriculture, such as prices of farm products, marketing, the produce exchanges, and speculation, co-operative organizations and rural credit, constitute the work of the semester. In addition, each member of the class is expected to make a special individual study of some topic in the field. Required for Agricultural Seniors. Elective for Arts and Science Juniors and Seniors.

Prerequisite—Economics 1. *1 Lec., 2 Rec. per week. 2d S.*

9. Corporation Finance. Asst. Prof. McKay. 204 Lib.

A study of the methods used to finance corporations; the various types of stocks and bonds; stock exchanges; underwriting; government regulation of corporations. Elective for Arts and Science Juniors and Seniors and Agricultural Seniors.

Economics 5 and 9 are given in alternate years. Economics 5 will be given in 1918–1919.

Prerequisite—Economics 1. *1 Lec., 2 Rec. per week. 1st S.*

Economics 13. Business Accounting. Mr. Ham. 206 T.H.

A study of the fundamental principles of accounting, first in private or individual business, then the partnership, and closing with the corporation. Interpretation of accounts, business statements and records. The subject is intentionally made to cover a broad field that it may be of the greatest service to students from all three divisions, both men and women. Elective for Arts and Science Sophomores and Juniors, and for Seniors from all divisions. *2 Rec., 1 Lab. per week. 1st S.*

Economics 14. Cost-Accounting. Mr. Ham. 206 T.H.

The study of cost-accounting as it operates in a modern manufacturing concern. The student handles and becomes familiar with the best cost-

keeping forms and records. Careful study is made of costs, especial attention being given to overhead expense or burden, including the problems of depreciation and idle factor time. Elective for Arts and Science Sophomores and Juniors, and for Seniors from all divisions.

Prerequisite—Economics 13. *2 Rec., 1 Lab. per week.* *2d S.*

Economics 15. Advanced Accounting Problems. Mr. Ham. 206 T.H.

Advanced theory of accounting supplemented with the solution of practical problems. Special study will be made of valuations, realizations, liquidations, insolvencies, executorships, and public utility accounting. This is largely a course in problems making practical application of the theory of previous courses. Elective for Arts and Science Juniors and Seniors.

Prerequisites—Economics 13. *3 Rec. per week.* *1st S.*

Economics 16. Auditing Theory and Practice. Mr. Ham. 206 T.H.

Study of various kinds of audits, and their values; duties and responsibilities of the auditor; his report, certificates, etc. Special problems and model reports supplement the theory in the subject. Elective for Arts and Science Juniors and Seniors.

Prerequisite—Economics 13. *3 Rec. per week.* *2d S.*

DEPARTMENT OF EDUCATION AND PSYCHOLOGY.

PROF. SIMMERS.

The training of teachers for high schools is recognized as being one of the important functions of New Hampshire College. In order to do this more adequately a department of education and psychology has been established which has as its aims:

1. To offer prospective high-school teachers, principals, and superintendents the necessary technical training for their profession.
2. To present educational history and problems in their more philosophic and scientific aspects so as to be valuable to all college students whether they become teachers or not.

To this end, it is expected that all students intending to teach will elect at least the following subjects in the department of education and psychology, making a total of thirteen hours,—Education 1 or 3 or 6, and 4 and 5, Psychology 52 and 53.

The prospective teacher should also take either the general or teacher's course in agriculture, the manual arts course, or the course in home economics. Or, if registered in the Arts and Science division, he should elect a major and one or two minors in its several departments. The aim should be to attain as intensive and extensive scholarship as possible during the four years spent in college.

The state of New Hampshire has accepted the provisions of the Smith-

Hughes act for training teachers of agriculture, home economics, and industrial education. New Hampshire College has been designated as the one state institution for the training of teachers in these subjects. Under the same act New Hampshire has accepted federal money for the purpose of paying increased salaries in schools to be known as Smith-Hughes high schools. Students wishing to be prepared to teach in these schools should confer with the head of the department of education.

EDUCATION.

PROF. SIMMERS.

4. School Hygiene. Prof. Simmers. 211 T.H.

The physical welfare of the pupil is considered in relation to his moral, social and intellectual development. Hygiene of play, study, work, daily programs, the selection of school building site, heating, ventilation, medical inspection, communicable diseases, detection and treatment of defects of the senses, laws of fatigue and its relief and prevention, etc., are studied. Required of Manual Arts and Home Economics Juniors, and Agricultural Seniors. Elective for all other students. Lectures, assigned readings and discussion. Junior subject.

2 Rec. per week. 2d S.

5. Secondary Education. Prof. Simmers. 211 T.H.

A systematic study of secondary school problems is made. Some of the topics considered are: The proper place and function of the high school, its relation to the grades, college and practical life; methods of instruction, program of studies, examinations and promotions, educational values of the various studies, qualities of an efficient teacher, and relation to the various elements of the school community. Each student will be required to make systematic observations in schools near Durham. Required of Home Economics Seniors and Agricultural and Manual Arts Juniors. Elective for all other students. Lectures, assigned readings and discussion. Senior subject.

Prerequisite—Psychology 52. *3 Rec. per week. 1st S.*

6. Principles of Industrial Education. Prof. Simmers. 211 T.H.

Some of the topics considered are: Primitive industry and educational practice, Industrial activity in the monasteries, the apprenticeship system, the Fellenberg Institute at Hofwyl, the manual training, agricultural, and home economics movements; Federal and State legislation concerning industrial education, vocational guidance. Typical industrial, trade, evening, and continuation schools, of the United States will be studied. Required of Agricultural, Home Economics, and Manual Arts Seniors. Lectures, assigned readings and discussion. Senior subject. *2 Rec. per week. 2d S.*

***7. Principles of Education.** Prof. Simmers. 211 T.H.

In this subject a general background for educational thought and practice is sketched. The biological, psychological, social, and ethical bases of education are considered. The aim is to give underlying principles and to show how they should function in the work of the grades and the high school. The subject is fundamental for those students intending to become principals or superintendents of schools. Elective for all students. Lectures, assigned readings and discussion. Senior subject.

Prerequisite—Psychology 52. *3 Rec. per week. 1st S.*

†8. History of Education. Prof. Simmers. 211 T.H.

Before and during the Middle Ages. An attempt is made to show the relationship between the industrial, intellectual, social, philosophic, and religious ideals of the times, and the varying conceptions of aim, method, curricula, and organization of educational agencies. Elective for all students. Lectures, assigned readings and discussion. Senior subject.

2 Rec. per week. 2d S.

***9. Administration and Supervision.** Prof. Simmers. 211 T.H.

This subject is designed for students who contemplate engaging in administrative or supervisory work. It aims at a systematic study of organization and management of school systems, promotion of pupils, standards of efficiency, powers and duties of the board of education, school law, school finance, etc. Elective for all students who have taken the other subjects in education. Lectures, assigned readings and discussion. Senior subject. *2 Rec. per week. 1st S.*

†10. History of Education. Prof. Simmers. 211 T.H.

Modern Period. This subject is quite similar to Education 1 in aim and method of treatment. It deals with the progress of society and related educational problems from the time of Comenius (beginning of seventeenth century) to the present time. It also attempts to show the origin and evolution of present theory and practice in education. Elective for all students. Lectures, assigned readings and discussion. Senior subject. *2 Rec. per week. 2d S.*

Teaching Home Economics (see **Home Economics 24**).

Teaching Agriculture (see **Agriculture 2**).

Teaching Industrial Education (see **Mechanical Engineering 72**).

Teaching Mathematics (see **Mathematics 10**).

Teaching English (see **English 66**).

For **Psychology** see page 120.

* Education 7 and 9 are given in alternate years. Education 9 is given in 1918-1919.
† Education 8 and 10 are given in alternate years Education 10 is given in 1918-1919.

ELECTRICAL ENGINEERING.

PROF. HEWITT, ASST. PROF. HITCHCOCK.

1. Dynamo Electric Machinery. Prof. Hewitt. 1–29 D.H.

This subject includes a general study of the various electrical quantities such as electromotive force, current, resistance, permeability of iron; the use of standard measuring instruments; direct and alternating current dynamos and motors including elementary theory. A large number of practical problems illustrate the applications of the above. One exercise per week is devoted to laboratory experiments illustrating the practical application of theory. For Electrical and Mechanical Juniors.

Prerequisites—Physics 52 and Mathematics 66.

3 Rec., 1 Lab. per week. 1st S.

2. Dynamo Electric Machinery. Asst. Prof. Hitchcock. 1–26 D.H.

A continuation of Electrical Engineering 1. A study of electrical measuring instruments, cells, batteries, electrolysis, electroplating, electrotyping, the elements of photometry and electric illumination, inductance, capacity, and elementary alternating currents. One exercise per week is devoted to laboratory experiments illustrating the practical application of theory. For Electrical and Mechanical Juniors.

Prerequisite—Electrical Engineering 1. 3 Rec., 1 Lab. per week. 2d S.

3. Telegraph and Telephone. Asst. Prof. Hitchcock. 1–26 D.H.

A study of the acoustic and electrical principles of telephony, transmitting and receiving apparatus, magneto and common-battery switchboards and accessories, selective party-line systems, intercommunicating systems, overhead and underground construction, phantom, simplex, and composite circuits, transpositions, etc. The principles of telegraphy, sounders, repeaters, etc. Wireless telegraphy and telephony. Automatic devices, electric signaling for purposes of alarms, railroads, etc. Elective. *1 Rec. per week. 1st S.*

6. Application of Electricity to Agriculture. Prof. Hewitt. 1–29 D.H.

Arranged for and adapted to students taking agriculture. The subject consists of a general study of the electric dynamo and motor, method of connecting same to the supply circuit and the care and operation of each; a general study of simple problems in transmission, methods of wiring for electric power and lighting; the telephone including the general principles upon which it operates and different systems of installation; electric bell wiring and signaling apparatus; simple water power developments and equipments; electrical utensils for domestic use, etc. Elective. *2 Rec., 1 Lab. per week. 2d S.*

9. Industrial Electricity. Prof. Hewitt. 1–29 D.H.

Arranged for and adapted to students taking the Mechanic Arts Course. Open only to Seniors in the Mechanic Arts Course.

2 Rec., 1 Lab. per week. 1st S.

11. Electrical Engineering Practice. Asst. Prof. Hitchcock. 1–26 D.H.

A study of the properties of periodic curves, the effects of inductance and capacity, the use of complex quantities, and a more detailed study of generators, motors, transformers, converters, and other electrical apparatus. For Electrical Seniors.

Prerequisite—Electrical Engineering 2. *4 Rec. per week. 1st S.*

12. Electrical Engineering Practice. Prof. Hewitt. 1–29 D.H.

A continuation and completion of Electrical Engineering 11. Hydro-electric developments including the design of reinforced concrete dams and power houses and the general subjects of water-power engineering; high tension power transmission; design of transmission lines and distributing systems; selection of apparatus for generating stations and distributing systems; lightning protection. For Electrical and Mechanical Seniors.

Prerequisite—Electrical Engineering 11. *4 Rec. per week. 2d S.*

14. Electric Railways. Asst. Prof. Hitchcock. 1–26 D.H.

The practicability of construction from an economic standpoint; determination of the size, type, and seating capacity of cars; track location; train schedules; methods of control; train resistance; speed-time and current-time curves; selection of motors; the feeder system; electrolysis; power station and substation location; storage batteries; electric track switches; etc. Illustrated by problems. For Electrical Seniors. *2 Rec. per week. 2d S.*

15. Electrical Laboratory.

Prof. Hewitt, Asst. Prof. Hitchcock. Basement D.H.

An advanced series of experiments. A written report will be required for which one additional credit hour will be given. For Electrical Seniors. *2 Lab. per week, 3 Hours' Credit. 1st S.*

16. Electrical Laboratory.

Prof. Hewitt, Asst. Prof. Hitchcock. Basement D.H.

A continuation of Electrical Engineering 15, with experiments of a more advanced nature. A written report will be required for which one additional credit hour will be given. For Electrical Seniors.

2 Lab. per week, 3 Hours' Credit. 2d S.

18. Thesis. Prof. Hewitt, Asst. Prof. Hitchcock.

A deposit of fifteen dollars to cover any damage done to instruments, apparatus, etc., is required in this subject. Any unexpended balance is

refunded at the close of the college year. Where apparatus is constructed as a part of a thesis, it shall remain the property of the department. Optional with head of department. For Electrical Seniors.

1 Rec., 2 Lab. per week. 2d S.

21. Industrial Electricity. Prof. Hewitt. 1–29 D.H.

A careful study of the principles and methods employed in electrical measurements; resistance of wire and batteries; current measurement by ammeters and electrolysis; the use of electrical measuring instruments; a series of laboratory experiments specially arranged to meet the requirements of chemical engineers. A brief study will be made of the dynamo, motor, transformer, primary and secondary batteries, arc and incandescent lamps and the general principles of electrical distribution. Experiments in electrolysis, electrical furnaces, reduction of metals, etc., are provided. For Chemical Seniors.

2 Rec., 1 Lab. per week. 1st S.

22. Industrial Electricity. Prof. Hewitt. 1–29 D.H.

A continuation of Electrical Engineering 21, but more advanced in nature. For Chemical Seniors.

Prerequisite—Electrical Engineering 21.

2 Rec., 1 Lab. per week. 2d S.

24. Design of Electrical Machinery. Asst. Prof. Hitchcock. 1–28 D.H.

A study of the design of the more important electrical machines, including the calculation of the dimensions of the machine, both electrical and mechanical, and the predetermination of its performance from the dimensions. For Electrical Seniors.

Prerequisite—Electrical Engineering 11. *2 Lab. per week. 2d S.*

26. Illuminating Engineering. Asst. Prof. Hitchcock. 1–26 D.H.

A theoretical discussion of the principles of illumination and the application of these principles to concrete examples. For Electrical Seniors who do not take Electrical Engineering 18. For other Electrical Seniors. *2 Rec. per week. 2d S.*

27. Contractors and Specifications. Prof. Hewitt. 1–29 D.H.

The laws and forms of engineering contracts; standard specifications for materials of construction and apparatus. Elective for Mechanical and Electrical Seniors. *1 Rec. per week. 1st S.*

30. Problems. Asst. Prof. Hitchcock. 1–26 D.H.

A large number of problems in both direct current and alternating current will be performed to illustrate the application of Electrical principles. Elective for Mechanical and Electrical Juniors.

1 Rec. per week. 1st S.

E. E. 101. Elements of Electrical Construction. Prof. Hewitt. 1–29 D.H.

In the recitation period, a study is made of the general principles of electricity and magnetism; the general principles involved in the wiring of buildings in order that electricity may be used for electric lighting, electric power and for other domestic purposes; a study is made of the requirements of the National Board of Fire Underwriters in connection with electrical installations.

In the laboratory periods, actual experiments are performed to illustrate the different types of electric wiring, including the use of the various electric fittings and their proper installations; various experiments are performed to illustrate in a practical way, the general principles of electric construction. The laboratory periods run parallel with the recitation periods and gives a student the actual practical applications of the different principles taken up. For Juniors taking Architectural, Electrical and Mechanical Construction.

2 Lec., 1 Lab. per week. 1st S.

E.E. 102. Direct and Alternating Current Apparatus.
Prof. Hitchcock. 1–26 D.H.

In the recitation periods there is described the principles of dynamos and motors, both direct and alternating current; a study of commercial testing for faults in dynamos, motors and other electrical devices and a practical study will be made of general repair work including materials available for such work and the adaptation of these materials to different classes of repair work; signalling apparatus, bells, gas ignition, etc., the method of computing the size of feeders and transmission circuits; a study of measuring instruments, electric safety devices, switches, wattmeters, etc.; a study of the fundamental principles and operation of telephones including bridging, series, and inter-communicating types.

In laboratory periods actual experiments are performed on dynamos and motors, both direct and alternating current, showing the method of connection, operating and care of same; experiments are performed on different types of telephones; actual practice will be given in repair work, winding of armatures, transformers, etc.; experiments are arranged for testing out and locating faults in dynamos, motors, transformers, etc. For Juniors taking Architectural, Electrical and Mechanical Construction. *2 Lec., 1 Lab. per week. 2d S.*

E.E. 103. Electric Machinery. Prof. Hewitt. 1–29 D.H.

Underlying principles; construction, operation and efficiency; dynamos for constant potential, dynamos for constant current; series, shunt, compound and differential wound motors; motor generators and boosters; polyphase alternators and polyphase motors; transformers; synchronous and induction motors. For Seniors taking Electrical Construction.

4 Lec. per week. 1st S.

E.E. 105. Electric Laboratory. Prof. Hitchcock. 1–26 D.H.

Dynamo efficiency and special dynamo operations; alternating current generators, synchronous machines; induction motor tests; transformer tests; rotary converter, etc. For Seniors taking Electrical Construction. *2 Lab. periods per week. 1st S.*

E.E. 106. Electric Laboratory. Prof. Hitchcock. 1–26 D.H.

A continuation of Course 105 but more advanced experiments will be performed. For Seniors taking Electrical Construction.

1 Lec., 2 Lab. periods per week. 2d S.

E.E. 107. Electric Design. Prof. Hitchcock. 1–26 D.H.

Study of principles; a complete design of a rheostat, and electro-magnets, switches, electrical controlling devices, regulators, etc. For Seniors taking Electrical and Mechanical Construction.

1 Lec., 2 Lab. periods per week. 1st S.

E.E. 108. Power Plant Design. Prof. Hewitt. 1–29 D.H.

Under this subject there is studied the electrical equipment of an ordinary power house, special study being given to so-called isolated plants adapted for private or for community use; the best choice of electrical machinery to meet different conditions; the practical features in design for hydro-electric developments including some practical methods of measuring the flow of water of constructing dams, of measuring amount of power available in a stream; the design and construction of transmission lines including various materials and supplies available for same; the care of pole line equipment, including the preservation of poles and cross arms; the care of transformers, lightning arresters and other devices. For Seniors taking Electrical and Mechanical Construction. *2 Lab. periods per week. 2d S.*

ENGLISH.

PROF. RICHARDS, PROF. SCOTT, ASST. PROF. SCUDDER, MR. VINING.

51. English Composition.
I. Prof. Richards. 205 T.H.
II. Asst. Prof. Scudder. 208 T.H.
III. Mr. Vining. 205 T.H.

The chief aim of this subject is a thorough review of English grammar and syntax, particular stress being laid upon the fundamentals of composition; such as correct spelling, choice of words, and clearness of sentence structure. Short themes, both prepared and impromptu, and monthly reports upon outside reading, are required. For all Freshmen.

3 Rec. per week. 1st S.

52. English Composition.

I.	Prof. Richards.	205 T.H
II.	Asst. Prof. Scudder.	208 T.H
III.	Mr. Vining.	205 T.H

This subject aims at training the student in the principles of goo writing and in the appreciation of good literature. A study is made c exposition, narration, description and argumentation, and frequer themes illustrating the functions of these kinds of writing are requirec Monthly book reports, and a careful bibliography of the literature upo some topic suggested by the instructor, are submitted by each membe of the class. Finally, the reading aloud in class of selections from cor temporary literature is practised frequently throughout the semeste For all Freshmen except Engineers who elect it in the first semeste Sophomore year. *3 Rec. per week. 1st and 2d S*

53. Advanced Composition and Literary Criticism.

Prof. Richards. 205 T.H

This is a subject in advanced English composition, in which the variou forms of writing, such as the essay, the short story, the business lette and book reviewing are treated. To supplement these exercises th student is required to read and criticize intelligently the writings of a least one noted prose writer and one poet, embodying the results in carefully prepared essay at the close of the semester. For Mechani Arts Sophomores. Elective for Arts and Science Sophomores an Juniors.

Prerequisites—English 51 and 52. *3 Rec. per week. 1st S*

54. Introduction to English Literature. Prof. Richards. 211 T.H

A general survey of English literature from the ninth to the twentiet century. To one who intends to teach English it is of fundamenta importance. Lectures, recitations and outside reading constitute th work of the semester. Elective for all classes.

Prerequisite—English 52. *3 Rec. per week. 2d S*

***55. The English Novel.** Prof. Richards. 205 T.H

The historical development of the English novel and the chief charac teristics of modern fiction are studied in this class. Lectures, recitation and extensive outside reading constitute the work of the semeste Elective for Arts and Science and Mechanic Arts Juniors and Senior

Prerequisites—English 51 and 52. *3 Rec. per week. 1st S*

56. Public Speaking. Prof. Richards. 205 T.H

A study of the principles and practice of public speaking, includin debate. Each student acquires practice in both prepared and in

* English 55 and 57 are given in alternate years. English 57 will be given in 1918 1919. English 59 and 65 are given in alternate years. English 65 will be given i 1918–1919.

promptu speaking upon topics of the day and subjects of educational value. Elective for Sophomores, Juniors and Seniors.

Prerequisites—English 51 and 52. *3 Rec. per week. 2d S.*

***57. Modern English Poetry.** Prof. Richards. 205 T.H.

A study is made of the great poems of English literature written between 1790 and 1890. While special attention is given to the poetry of Wordsworth, Tennyson and Browning, considerable outside reading is required in the works of Shelley, Keats, Rossetti, Arnold and other poets of the nineteenth century. Elective for Arts and Science and Mechanic Arts Juniors and Seniors.

Prerequisites—English 51 and 52. *3 Rec. per week. 1st S.*

58. History of the English Drama. Asst. Prof. Scudder. 208 T.H.

A survey of the English drama from its beginnings to the Closing of the Theatres. Constant reading of the plays with written criticisms and reports is required. Elective for Sophomores, Juniors and Seniors.

Prerequisite—English 52. *3 Lec. per week. 2d S.*

***59. Chaucer.** Prof. Richards. 205 T.H.

Lectures upon the life and times of Chaucer will be given, and the *Canterbury Tales* will be read and discussed in class. At the close of the study each student will hand in a thesis embodying the results of independent investigation of Chaucerian literature. For Juniors and Seniors majoring in English.

Prerequisites—English 52, 54, 57, 62. *3 Rec. per week. 1st S.*

60. American Literature. Prof. Scott. 202 Lib.

Lectures and extensive outside reading. Elective for Arts and Science and Mechanic Arts Juniors and Agricultural Seniors.

Prerequisites—English 51 and 52. *4 Rec. per week. 2d S.*

61. Modern English Prose. Prof. Richards. 205 T.H.

A study of English prose, exclusive of fiction, in the nineteenth century. Special attention will be paid to the writings of Lamb, Macaulay, Carlyle, Newman, Arnold, Ruskin and Frederic Harrison. Lectures will be given, and written reports at frequent intervals will be required. Elective for Arts and Science Juniors and Seniors.

Prerequisites—English 51 and 52. *3 Lec. per week. 1st S.*

62. Shakespeare's Plays. Prof. Richards. 205 T.H.

A study of all of Shakespeare's plays. Recitations and occasional dramatic representations of famous scenes. A large amount of reading required. Elective for Arts and Science Juniors and Seniors.

Prerequisites—English 51 and 52. *3 Lec. per week. 2d S.*

* English 55 and 57 are given in alternate years. English 57 will be given in 1918–1919. English 59 and 65 are given in alternate years. English 65 will be given in 1918–1919.

63. Writing for Publication. Asst. Prof. Scudder. 208 T.H

A practical study of the preparation of articles for the newspapers an magazines. The student is taught to select the essential and presen it tellingly. It is for all whose vocation will demand frequent writin for publication, and as a preparation in part for those who intend to tak up newspaper work after graduation. It does not cover the entire fiel of journalism, but the student will be instructed in the duties of a re porter and be given constant practice in writing news stories. Electiv for those who have attained a grade of C or higher in English 52.

Prerequisites—English 51 and 52 (with the added provision indicate above). *3 Rec. per week. 1st*

***65. History of the Language.** Prof. Richards. 205 T.H

The object of this study is to give the student an intelligent appreci tion of the English language as it has developed from its origin to th oral and written speech of today. Lectures, recitations and outsic reading will constitute the work of the semester. Elective for Junio and Seniors majoring in English.

Prerequisites—English 52 and 62. *3 Rec. per week. 1st*

66. The Teaching of High School English. Mr. Vining. 211 T.H

This subject is especially designed for those who major in Englis The English classics taught in the high schools are read and discusse from the viewpoint of the teacher, and the different methods of presen ing the epic, novel, drama and short story are studied and practise Elective for Arts and Science Seniors.

Prerequisites—English 59 or 62. *1 Lec. per week. 2d*

ENTOMOLOGY.

PROF. O'KANE, MR. CLEVELAND.

1. Principles of Economic Entomology.
Prof. O'Kane, Mr. Cleveland. 212 T.H

The relation of the structure and classification of insects to metho of insect control. The preparation and application of insecticide Spray machinery and appliances. For Agricultural Sophomores. Ele tive for Arts and Science Sophomores, Juniors and Seniors.

2 Rec., 1 Lab. per week. 1st

2. Insects of Orchard and Garden. Mr. Cleveland. 203 T.H

The application of methods of insect control to typical injurio species. Studies in the life histories and habits of important insect pes of orchard, garden and certain field crops. Adapted especially for st

* English 65 and English 59 are given in alternate years. English 65 will be given 1918–1919.

dents in Horticulture and in General Agriculture. Elective for Agricultural and for Arts and Science Juniors and Seniors.

Prerequisite—Entomology 1. *1 Lec., 1 Lab. per week. 2d S.*

3. Insects of Domestic Animals. Mr. Cleveland. 203 T.H.

The insect enemies of domestic live stock; their life histories, habits and means of control. Adapted especially for students in Animal Husbandry. Elective for Agricultural and for Arts and Science Juniors and Seniors.

Prerequisite—Entomology 1. *1 Lec., 1 Lab. per week. 1st S.*

4. Household Insects. Medical Entomology.

Prof. O'Kane, Mr. Cleveland. 212 T.H.

The life histories, habits and means of control of insects of the household and of stored products. The relation of insects to disease. Adapted especially for students in Home Economics. Elective for Arts and Science Sophomores, Juniors and Seniors, and for Agricultural Juniors and Seniors. *2 Lec. per week. 2d S.*

5. Advanced Economic Entomology.

Prof. O'Kane, Mr. Cleveland. 203 T.H.

Detailed studies of problems involved in applied entomology. The literature of economic entomology. Investigational methods. Practice in arranging projects. Original investigations in the life history and habits of one or more injurious species. Adapted for advanced students. Elective for Agricultural and for Arts and Science Juniors and Seniors. Open to students only by permission of head of department. Credit and hours to be arranged. 1st S.

6. Advanced Economic Entomology.

Prof. O'Kane, Mr. Cleveland. 203 T.H.

Continuation of Entomology 5. 2d S.

7. Forest Insects. Mr. Cleveland. 203 T.H.

Studies in the life histories and habits of the more destructive forest insects and their means of control. Especially adapted for students in Forestry. Elective for Agricultural and for Arts and Science Juniors and Seniors.

Prerequisite—Entomology 1. *1 Lec., 1 Lab. per week. 1st S.*

FORESTRY.

PROF. WOODWARD, MR. ————.

51. Principles of Forestry. Prof. Woodward. 202 M.H.

This subject is intended to meet the needs of Agricultural students who desire an intelligent appreciation of the possibilities of the farm woodlot and others who wish to obtain a general knowledge of the principles of

forestry. The value of forests, their protection, their utilization, their improvement, and regeneration are all discussed with special reference to New Hampshire conditions. For all Agricultural Sophomores. Elective for other students. *2 Lec., 1 Lab. per week. 1st S.*

52. Silviculture. Prof. Woodward and Assistant. 202 M.H.

The establishment of forests through artificial regeneration; value of different species; seed collecting; testing and storage; nursery work; direct seeding; planting; care of plantations; cost of establishing plantations; planting plans. Supplemented by actual nursery and planting work. For Forestry Juniors. Elective for other students.

Prerequisite—Forestry 55. *2 Lec., 1 Lab. per week. 2d S.*

53. Dendrology. Assistant. 202 M.H.

A study of the habits, distribution and characteristics of the native trees and important introduced trees of the Northeastern States, in both summer and winter conditions, and with particular reference to the prominent and constant features which lead to ready identification; and a general study of the important timber trees of the United States, including the structure of their woods. For Forestry and Mechanic Arts Juniors. Elective for other students.

2 Lec., 1 Lab. per week. 1st S.

54. Forest Mensuration. Assistant. 202 M.H.

Principles and methods of scaling logs and cord wood and estimating lumber; also a study of the diameter, height, growth and yield of the commercial tree species found in New Hampshire. For Forestry Juniors. Elective for other students. *2 Lec., 1 Lab. per week. 2d S.*

55. Silviculture. Prof. Woodward and Assistant. 202 M.H.

A study of the life history of trees; the relation of the different species to light, moisture, soil, temperature and to each other in the forest; reproduction of trees, form and character of stands; the origin and determination of forest type; forest maps; forest descriptions; the improvement of the forest through use and proper treatment; the various systems of cutting and reproducing forests by natural means as practised in Europe and the United States, supplemented by frequent woods practise and demonstrations. For Forestry Juniors. Elective for other students. *2 Lec., 2 Lab. per week. 1st S.*

56. Forest Management. Prof. Woodward and Assistant. 202 M.H.

The management of woodlots and large forest tracts for the largest immediate and future returns; and the preparation of working plans to co-ordinate the lumbering, protection, improvement, and regeneration of forests so as to make them yield the highest net returns. For Forestry Seniors.

Prerequisites—Forestry 52, 53, 54, 55 and 57.

2 Lec., 2 Lab. per week. 2d S.

57. Forest Protection. Prof. Woodward. 202 M.H.

Consideration of practical measures for the protection of forests from fire, insects, fungous diseases, grazing, trespass, and destructive lumbering; and an examination of the federal and state laws relating to forest interests. For Forestry Seniors.

Prerequisites—Forestry 52, 53, 54, and 55. 2 Lec. per week. 1st S.

58. Advanced Forestry. Prof. Woodward. 202 M.H.

Elective for Forestry Seniors.

Prerequisites—Forestry 52, 53, 54, 55, 57, and 59.

3 Lab. per week. 2d S.

59. Advanced Forestry. Prof. Woodward. 202 M.H.

Work to be arranged according to the needs of individual students. Elective for Forestry Seniors.

Prerequisites—Forestry 52, 53, 54, and 55. 3 Rec. per week. 1st S.

60. Forest Utilization. Prof. Woodward. 202 M.H.

Advanced elective subject for Mechanic Arts Juniors or Seniors. Work to be arranged to meet the needs of individual students.

Prerequisite—Forestry 53. 3 Rec. per week. 2d S.

62. Practice of Forestry. Prof. Woodward. 202 M.H.

Development and present status of forestry in different countries; the work of the federal government and its management of the national forests; state forest policies; the lumber industry in the United States; the application of forestry to different regions. For Forestry Seniors. Lectures and special readings.

Prerequisites—Forestry 52, 53, 54, and 55. 3 Lec. per week. 1st S.

64. Town Forest Problems. Prof. Woodward. 202 M.H.

A detailed study of the forest problems of his home town for one who has had Forestry 51. Aimed to prepare those who are planning to settle in a definite locality to become expert in timber estimating and valuation, and artificial and natural regeneration in that locality. Individual conferences and reports.

Prerequisite—Forestry 51. 2 Rec. per week. 2d S.

FRENCH.

PROF. WHORISKEY, MR. KELLY.

1. Elementary French. Prof. Whoriskey. 102 T.H.

Elements of French Grammar. Reading of simple stories; conversation and dictation. Elective for Arts and Science students.

3 Rec. per week, 1st S.

2. A Continuation of French 1. Prof. Whoriskey. 102 T.H.

Elective for Arts and Science students. *3 Rec. per week. 2d S.*

3. French Prose. Prof. Whoriskey, Mr. Kelly. 107 T.H.

Reading and translation; composition; outside reading. Elective for Arts and Science Sophomores. Freshmen who have offered French for admission are allowed to take French 3 and 4.

Prerequisite—French 2. *3 Rec. per week. 1st S.*

4. A continuation of French 3. Prof. Whoriskey, Mr. Kelly. 107 T.H.

Prerequisite—French 3. *3 Rec. per week. 2d S.*

***5. French Literature of the Nineteenth Century.**

Mr. Kelly. 107 T.H.

Selections from Hugo, Balzac, Sand, Dumas père, Daudet, Gautier. Composition. Elective for Arts and Science students.

Prerequisite—French 4. *3 Rec. per week. 1st S.*

***6. A continuation of French 5.** Mr. Kelly. 107 T.H.

Elective for Arts and Science students.

Prerequisite—French 5. *3 Rec. per week. 2d S.*

***7. French Literature of the Seventeenth Century.**

Mr. Kelly. 107 T.H.

Lives and works of the following: Corneille; Racine; Molière; Bossuet; Boileau; Mme. de Sévigné; La Fontaine. Composition. Elective for Arts and Science students.

Prerequisite—French 4. *3 Rec. per week. 1st. S.*

***8. A continuation of French 7.** Mr. Kelly. 107 T.H.

Elective for Arts and Science students.

Prerequisite—French 7. *3 Rec. per week. 2d S.*

9. French Composition and Conversation. Mr. Kelly. 107 T.H.

Elective for Arts and Science students. Recommended for those desiring to teach. *3 Rec. per week.*

10. French Composition and Conversation.

Prof. Whoriskey. 107 T.H.

A continuation of French 9. *3 Rec. per week.*

11. Military French. Mr. Kelly. 107 T.H.

A conversational subject for those who may be called on for service in France. It is a great advantage not only for officers but also for privates to have some training in conversational French. The hours will be scheduled to meet the convenience of those electing the course.

2 hours per week. 1st S.

* French 5 and 6 will be given in 1918–1919 and in alternate years with French 7 and 8

12. Military French. Mr. Kelly. 107 T.H.

A continuation of French 11.

2 hours per week. 2d S.

GEOLOGY.

PROF. JACKSON.

51. Elementary Geology. C. F. Jackson. 212 T.H.

A detailed study of the evolution of the earth, with special emphasis on the dynamic factors responsible for its present surface configuration. Local conditions will be studied, with reference to the factors of erosion, transportation and consolidation.

Origin and distribution of economic mineral products will be discussed. For Agricultural Juniors. Elective for Mechanic Arts Juniors, Arts and Science Juniors and Seniors.

3 Rec. per week. 1st S.

52. Historical Geology. C. F. Jackson. 212 T.H.

A detailed study of the history of various groups of animals, as recorded in the rocks of the earth's surface. Special attention will be given to the philogenetic development of the vertebrates. Recitations, lectures and laboratory work. Elective for Agricultural and Arts and Science Juniors and Seniors.

Prerequisites—Zoölogy 51, 52 and Geology 51.

3 Rec. per week. 2d S.

GERMAN.

PROF. WHORISKEY, MR. KELLY, MR. VINING.

1. Elementary German. Prof. Whoriskey, Mr. Vining. 107 T.H.

Elements of German grammar. Reading of simple stories; conversation; singing of German folk-songs. For Chemical Engineering Freshmen who have not offered German for admission. Elective for others.

3 Rec. per week. 1st S.

2. Elementary German. Prof. Whoriskey, Mr. Vining. 107 T.H.

A continuation of German 1. For Chemical Engineering Freshmen who have not offered German for admission. Elective for others.

3 Rec. per week. 2d S.

3. German Prose. Prof. Whoriskey, Mr. Kelly. 107 T.H.

Reading and translation. For Chemical Engineering Sophomores. Elective for others. Freshmen who have offered German for admission are allowed to take German 3 and 4. *3 Rec. per week. 1st S.*

4. German Prose. Mr. Vining. 107 T.H.

A continuation of German 3. Reading and Translation of Hauff's Lichtenstein and similar books. Elective.

Prerequisite—German 3. *3 Rec. per week. 2d S.*

***5. Goethe.** Prof. Whoriskey. 107 T.H.

His life and works. The following books are read and criticized: 1. Hermann und Dorothea; 2. Iphigenie; 3. Torquato Tasso; 4. Egmont; 5. Götz von Berlichingen; 6. Dichtung u. Wahrheit (in part); 7. Die Leiden des jungen Werters; 8. Faust, Part I. Elective for Arts and Science students.

Prerequisite—German 4. *3 Rec. per week. 1st S.*

***6. Goethe.** Prof. Whoriskey. 107 T.H.

A continuation of German 5. Elective for Arts and Science students.

Prerequisite—German 5. *3 Rec. per week. 2d S.*

***7. Schiller.** Prof. Whoriskey. 107 T.H.

His life and works. The following books are read and criticized: 1. Wilhelm Tell; 2. Maria Stuart; 3. Die Jungfrau; 4. Die Braut von Messina; 5. Wallenstein; 6. Don Carlos; 7. Geschichte d. 30 jährigen Krieges; 8. Ballads. Elective for Arts and Science students.

Prerequisite—German 4. *3 Rec. per week. 1st S.*

***8. Schiller.** Prof. Whoriskey. 107 T.H.

A continuation of German 7. Elective for Arts and Science students.

Prerequisite—German 7. *3 Rec. per week. 2d S.*

†9. German Composition and Conversation.

Prof. Whoriskey. 107 T.H.

Elective for Arts and Science students. Both aural and oral training are given in German 9, 10, 11 and 12, and opportunity is given to teach under supervision. *3 Rec. per week. 1st S.*

†10. A continuation of German 9. Prof. Whoriskey. 107 T.H.

3 Rec. per week. 2d S.

†11. German Composition and Conversation.

Prof. Whoriskey. 107 T.H.

Elective. *3 Rec. per week. 1st S.*

†12. A continuation of German 11. Prof. Whoriskey. 107 T.H.

Elective. *3 Rec. per week. 2d S.*

* German 7 and 8 are to be given in 1918–1919, German 13 and 14 in 1919–1920, and German 5 and 6 in 1920–1921.

† German 9, 10, 11 and 12 will not be given in 1918–1919.

***13. Sudermann.** Prof. Whoriskey. 107 T.H.

The following books are read and criticized: 1. Frau Sorge; 2. Der Katzensteg; 3. Teja; 4. Heimat; 5. Johannes; 6. Frenssen's Jörn Uhl. Elective for Arts and Science students.

Prerequisite—German 4. *3 Rec. per week. 1st S.*

***14. Sudermann and His Contemporaries.**

Prof. Whoriskey. 107 T.H.

A continuation of German 13.

Prerequisite—German 13. *3 Rec. per week. 2d S.*

16. Scientific German. Mr. Kelly. 107 T.H.

For Chemical Engineering Sophomores. *3 Rec. per week. 2d S.*

HISTORY.

PROF. SCOTT, ASST. PROF. MCKAY, MR. C. F. SCOTT.

In the subjects in history an important place is given to historical reading carried on in the reference room. In some cases a considerable part of the work is written.

1. History of Europe from 476 to 1492. Prof. Scott. 202 Lib.

Recitations and collateral reading. Elective for Arts and Science Freshmen and Mechanic Arts Juniors. *3 Rec. per week. 1st S.*

2. History of Europe from 1492 to 1715. Prof. Scott. 202 Lib.

Recitations and collateral reading. Elective for Arts and Science and Mechanic Arts Freshmen. *3 Rec. per week. 2d S.*

3. History of Europe from 1715 to 1815. Asst. Prof. McKay. 204 Lib.

Recitations and collateral reading. Elective for Arts and Science Sophomores.

Prerequisite—History 1. *3 Rec. per week. 1st S.*

4. History of Europe since 1815. Asst. Prof. McKay. 204 Lib.

Recitations and collateral reading. Elective for Arts and Science Sophomores.

Prerequisite—History 2 or History 3. *3 Rec. per week. 2d S.*

5. American History to 1801. Prof. Scott. 202 Lib.

Elective for Arts and Science Juniors and Mechanic Arts Seniors.

3 Rec. per week. 1st S.

*German 7 and 8 are to be given in 1918–1919, German 13 and 14 in 1919–1920, and German 5 and 6 in 1920–1921.

6. Political and Constitutional History of the United States from 1801 to 1861. Prof. Scott. 202 Lib.

Elective for Arts and Science Juniors and Mechanic Arts Seniors.

3 Rec. per week. 2d S.

7. Political and Constitutional History of the United States since 1860. Prof. Scott. 202 Lib.

Elective for Arts and Science Seniors.

Prerequisite—History 6. *3 Rec. per week. 1st S.*

HOME ECONOMICS.

MISS KNOWLTON, MISS REINER, MISS LIVINGSTON.

1. Personal Hygiene. Miss Knowlton. 105 T.H.

A short study of the laws of health; the means of improving the physical and mental efficiency of the body; individual responsibility for race progress. Required of all women Freshmen.

1 Rec. per week. 1st S.

2. The House. Miss Reiner. 105 T.H.

Its location, drainage. Outline house-plans. Wall and floor finishes. The plumbing, heating, lighting, and ventilation of the house. Labor-saving devices. Cleaning processes and care of furniture. Social forms and usages. For Home Economics Freshmen.

2 Rec. per week. 2d S.

3. Elementary Clothing. Miss Livingston. 105 T.H.

The fundamental stitches used in the making of household linens and undergarments. Elementary drafting, cutting, fitting, hand and machine sewing with application to undergarments. Knitting, crocheting, and simple embroidery; darning and mending. Special attention to costs as compared with ready-to-wear garments. Students provide all material subject to the approval of the instructor. Required of Home Economics Freshmen.

3 Lab. per week. 3 hours outside work per week. 1st S.

6. Textiles. Miss Livingston. 105 T.H.

The textile fibers: their sources, production and uses; study of their physical and chemical properties. Examination of the fibers and weaves of woven fabrics. Judging of textile fabrics in regard to durability, cost and suitability for household or for personal purposes. Laundering and cleaning fabrics. Expense for trips and supplies about $4.00.

Prerequisite—Chemistry 56. *1 Rec., 1 Lab. per week. 2d S.*

7. Foods, and Principles of Cooking.

Miss Reiner, Miss Livingston. 105 T.H.

Composition and nutritive value of food-stuffs and of foods. Effects of heat and cold upon food-stuffs; food preservation and storage. Leavening agents. Laboratory practice in the principles of cooking. The cost and nutritive value of the foods prepared. Comparative economy of foods. For Home Economics Sophomores.

Prerequisites—Chemistry 56, Physics 58.

2 Rec., 2 Lab. per week. 1st S.

8. Foods, and Principles of Cooking, Continued.

Miss Reiner. 105 T.H.

Preparation and service of meals; cost per person. Entertainment of guests. For Home Economics Sophomores.

Prerequisite—Home Economics 7. *2 Rec., 2 Lab. per week. 2d S.*

10. Draping, Drafting and Elementary Dressmaking.

Miss Livingston. 105 T.H.

Practice given in drafting, cutting, fitting and designing of patterns. Drafting of a tight-fitting lining and draping of original and copied designs in cheese cloth and other suitable materials. Students provide all materials. Home Economics Juniors.

Prerequisites—Home Economics 3 and 6, Drawing 69.

2 Lab. per week. 2d S.

Parallel—Drawing 70. *2 Hours outside work per week.*

11. Principles of Human Nutrition. Miss Knowlton. 105 T.H.

Composition of the body; its relation to the physical universe. The composition, digestion, absorption, assimilation and oxidation of food-stuffs. The physiological fuel value of food-stuffs. Methods of investigation employed in the study of human nutrition. The food requirements of the body as influenced by activity, size, age, sex. Problems throughout the semester. It is hoped that a trip to Boston can be included. Cost about $5. For Home Economics Juniors.

Prerequisites—Home Economics 8, Chemistry 57, Zoölogy 57.

3 Rec. per week. 1st S.

12. Nutrition and Dietetics. Miss Knowlton. 105 T.H.

Continuation of Home Economics 11. Problems in dietary calculations. Comparative physiological fuel values of foods. Application of the principles of human nutrition in the adaptation of diet to varying physiological, social and economic conditions. For Home Economics Juniors.

Prerequisite—Home Economics 11. *2 Rec., 1 Lab. per week. 2d S.*

14. House Decoration. Miss Reiner. 105 T.H.

Applications of theory of color, and of design in house decoration. Selection of house furnishings; study of values; estimation of costs, and comparisons of sanitary and artistic furnishings. For Home Economics Juniors.

Prerequisites—Drawing 69, Home Economics 2, 6.

2 Rec. per week. 1st S.

Parallel—Drawing 70.

15. Dressmaking. Miss Livingston. 105 T.H.

The course includes the making of a silk shirt waist, a wool skirt, and a lingerie dress. Discussion and application to clothing of the theory of color and design. Students provide all material subject to the approval of the instructor. For Home Economics Seniors.

Prerequisites—Home Economics 3, 6 and 10, Drawing 69 and 70.

2 Lab. per week. 1st S.

2 Hours outside work per week.

19. Household Administration. Miss Knowlton. 105 T.H.

Evolution of the home; standards of living; expenditure of the income; organization of the household. Household and personal accounts. Care of the house and family; domestic service. Home nursing. Supervised house practice. For Home Economics Seniors.

Prerequisites—Home Economics 10, 12, Economics 1, Zoölogy 58, Botany 55. *3 Rec. per week. 1st S.*

21. Senior Problems in Home Economics.

Miss Knowlton. 105 T.H.

Problems may be in experimental cookery, dietetics, textiles, economics of family. Elective for Home Economics Seniors.

Prerequisites—Home Economics 12, and 10.

Parallel—Home Economics 19. *2 Rec. per week. 1st S.*

22. Seminar. Miss Knowlton. 105 T.H.

Discussion and reports on recent work in Home Economics. Required of Home Economics Seniors. *1 Lab. per week. 2d S.*

23. Supervised House Practice.

24. Teachers' Course. Miss Knowlton. 105 T.H.

Development of Home Economics. Planning of courses especially for secondary schools; outlines of lessons and methods of presentation; selection of equipment. Visiting Home Economics classes. Two to four weeks supervised practice teaching. Elective for Home Economics Seniors. Required in teacher-training course.

Prerequisite—Home Economics 10, 12, 13, 19.

3 Rec. per week. 2d S.

26. Foods and Nutrition. Survey Subject. Miss Knowlton. 105 T.H.

Open to any Seniors and Juniors (other than Home Economics) in the college who desire a general knowledge of foods and nutrition. Lectures will include a discussion of foods, food preparation, and human nutrition. Elective for all divisions. *2 Rec. per week. 2d S.*

HORTICULTURE.

PROF. GOURLEY, ASSOC. PROF. WOLFF, ASST. PROF. HEPLER, MR. MACFARLANE.

52. Vegetable Gardening. Asst. Prof. Hepler. 202 M.H.

This subject is designed to give a working knowledge of the various phases of vegetable production. It includes a study of garden soils, germination and planting of seeds, selection of varieties with reference to the conditions of the state, construction and management of hot beds and cold frames, fertilizing, irrigation, packing and marketing of vegetables. For Agricultural Sophomores.

1 Rec., 1 Lab. per week. 2d S.

53. Greenhouse Construction and Management.

Asst. Prof. Hepler. 202 M.H.

This subject aims to familiarize the student with modern methods of greenhouse work and the more important plants grown under glass. Sorts, varieties, culture, marketing, and enemies of greenhouse plants are studied. Each student is required to do practical work in propagating, potting, watering, and ventilating. A study is made of the history and development of different types of greenhouses, including methods of heating and general management. Required in Horticultural Course, Junior year. Elective in other Agricultural Courses.

1 Lec., 1 Rec., 1 Lab. per week. 1st S.

54. Practical Pomology. Assoc. Prof. Wolff. 202 M.H.

A study of the fundamental problems of fruit growing, such as location, choice of site, kind and adaptability of soil for fruit growing, soil management, planting of orchards, pruning, sprays and spraying, htinning, harvesting and marketing. For Agricultural Sophomores.

2 Rec., 1 Lab. per week. 2d S.

55. Systematic Pomology and Commercial Orcharding.

Prof. Gourley. 202 M.H.

The first eight weeks of the semester are devoted to a study of the leading varieties of fruits and their adaptations, with special reference to New England conditions. During the remainder of the semester this subject deals with the management of commercial orchards, problems of marketing, packing, transportation and coöperation. Special

study is given to the experimental data on maintaining soil fertility in the orchard and on other fundamental factors in orchard management. In the laboratory special instruction is given to the packing of apples for market and judging fruit. Required in Horticultural Course, Senior year. *3 Rec., 1 Lab. per week. 1st S.*

56. Landscape Gardening. Asst. Prof. Hepler. 202 M.H.

A study of the principles involved in ornamental and landscape gardening. Special attention is given to the beautifying of home surroundings. Laboratory work consists in landscape design and practice in laying out and planting home and public grounds. Required in Horticultural Course, Junior year. Elective in other Agricultural Courses.

1 Lec., 1 Rec., 1 Lab. per week. 2d S.

58. Nursery Management. Assoc. Prof. Wolff. 202 M.H.

A study of the methods of propagation and the care of trees, shrubs and perennial plants in the nursery. Lectures, reference readings and practice. Required in Horticultural Course, Junior year. Elective in other Agricultural Courses. *2 Rec., 1 Lab. per week. 2d S.*

60. Floriculture. Mr. Macfarlane. 202 M.H.

A special study of the classification, history and development of the flowers and plants grown commercially and about the home, together with instruction and practice in their propagation and culture. Required in Horticultural Course, Junior year. Elective for others.

Prerequisites—Botany 51 and 52. *1 Rec., 1 Lab. per week. 2d S.*

62. Horticultural Seminar. Prof. Gourley. 202 M.H.

A review of the important horticultural literature and methods of investigational work. Required in Horticultural Course, Senior year. Elective in other Agricultural Courses.

One seminar meeting per week. 2d S.

64. Evolution and Improvement of Plants. Prof. Gourley. 202 M.H.

The applications of the principles of evolution to the improvement of plants. Variation, selection and heredity as applied to the problems of plant breeding in agricultural practice. Required in Horticultural and General Agricultural Courses, Senior year. Elective in other Agricultural Courses.

Prerequisites—Botany 51 and 52. *2 Rec. per week. 2d S.*

65. Advanced Horticulture. Prof. Gourley. 202 M.H.

Special work in horticulture. May be taken by arrangement with the head of the department. Prerequisites will depend on the work taken. Elective for Horticultural and General Agricultural Seniors.

Two to five exercises per week. Time to be arranged. 1st S.

66. Advanced Horticulture. Prof. Gourley. 202 M.H.

A continuation of Horticulture 65. Special arrangement must be made with the head of the department for this work. Elective for Horticultural and General Agricultural Seniors. Time and credit to be arranged. *Two to five exercises per week. 2d S.*

68. Vegetable Forcing. Asst. Prof. Hepler. 202 M.H.

A subject dealing with a study of special vegetables as grown under glass. Emphasis is placed upon the commercial phases of the work, including varieties, culture, style of packages, and marketing. Each student is required to grow crops from seeding to maturity. In addition, a study of vegetable classification is given. For Horticultural Juniors. Elective in other Agricultural Courses. *1 Lec., 2 Lab. per week. 2d S.*

LATIN.

PROF. WHORISKEY, MR. VINING.

1. Livy (Book I). Mr. Vining. 102 T.H.

Elective for Arts and Science students who have offered Advanced Latin for entrance. *3 Rec. per week. 1st S.*

2. Horace (Odes and Epodes). Mr. Vining. 102 T.H.

Prerequisite—Latin 1. *3 Rec. per week. 2d S.*

MATHEMATICS.

ASSOC. PROF. STECK, MR. GARABEDIAN, MR. PIERCE.

1. Trigonometry.
I. Assoc. Prof. Steck. D.H.
II. Mr. Garabedian. D.H.
III. Mr. Pierce. D.H.

The general angle; trigonometric functions of the general angle; radian measure; theory and use of logarithms; solution of right and oblique triangles with and without logarithms; trigonometric identities and equations; inverse trigonometric functions. For Engineering and Mechanics Arts Freshmen and Freshmen taking Architectural, Mechanical and Electrical Construction. Elective for Arts and Science Freshmen.

Mathematics 3 required as a parallel course. 3 Rec. per week. 1st S.

2. Analytic Geometry.
I. Assoc. Prof. Steck. D.H.
II. Mr. Garabedian. D.H.
III. Mr. Pierce. D.H.

Rectangular and polar co-ordinates; transformation of co-ordinates; point; straight line; circle; conic sections; higher plane curves; empirical

equations; loci problems. For Engineering Freshmen. Elective for Arts and Science Freshmen.

Prerequisites—Mathematics 1 and 3. *3 Rec. per week.* *2d S.*
Mathematics 4 required as a parallel course.

3. Algebra. I. Assoc. Prof. Steck. D.H. II. Mr. Garabedian. D.H. III. Mr. Pierce. D.H.

Review of fundamental operations; theory of exponents; binomial theorem; variation; complex numbers; graphs of simple algebraic functions; elements of determinants and theory of equations; special problems in solid geometry for algebraic solution. For Engineering and Mechanic Arts Freshmen and Freshmen taking Architectural, Mechanical and Electrical Construction. Elective for Arts and Science Freshmen.

Mathematics 1 required as a parallel course. *3 Rec. per week.* *1st S.*

4. Calculus. I. Assoc. Prof. Steck. D.H. II. Mr. Garabedian. D.H. III. Mr. Pierce. D.H.

Differentiation of the standard elementary forms with simple applications. For Engineering Freshmen. Elective for Arts and Science Freshmen.

Prerequisite—Mathematics 1 and 3. *3 Rec. per week.* *2d S.*
Mathematics 2 required as a parallel course.

5. Calculus. I. Assoc. Prof. Steck. D.H. II. Mr. Garabedian. D.H.

A continuation of Mathematics 4. More advanced applications of differentiation; integration of the standard elementary forms; various methods of integration; simple applications of integration. For Engineering Sophomores. Elective for Arts and Science Sophomores.

Prerequisite—Mathematics 2 and 4. *3 Rec. per week.* *1st S.*

6. Calculus. Mr. Garabedian. D.H.

A continuation of Mathematics 5. Applications of the definite integral to geometry, physics and mechanics. For Engineering Sophomores. Elective for Arts and Science Sophomores.

Prerequisite—Mathematics 5. *3 Rec. per week.* *2d S.*

7. Differential Equations. Assoc. Prof. Steck. D.H.

Devoted to the study of ordinary differential equations, especially those of the first and second orders, with applications to geometry, physics and mechanics.

Prerequisite—Mathematics 6. *3 Rec. per week.* *1st S.*

8. Advanced Calculus. Assoc. Prof. Steck. D.H.

A study of some of the more advanced topics of differential and integral calculus with applications. Offered in alternate years. Given in 1918–1919.

Prerequisite—Mathematics 6. *3 Rec. per week. 2d S.*

9. Theory of Equations and Determinants. Mr. Garabedian. D.H.

Some fundamental properties of determinants; solution and theory of algebraic equations in one unknown; systems of simultaneous equations. Offered in alternate years. Given in 1918–1919.

Prerequisite—Mathematics 6. *3 Rec. per week. 1st S.*

10. Teaching of Mathematics in Secondary Schools.
Assoc. Prof. Steck. D.H.

Lectures and reports on assigned readings. Particular attention given to the teaching of first year algebra and plane geometry. A semester paper on some assigned topic will be required of students taking this course. Offered in alternate years. Given in 1919–1920.

Prerequisite—Education 5. *2 Rec. per week. 2d S.*

11. Advanced Analytic Geometry. Mr. Garabedian. D.H.

A review of plane and solid Analytic geometry. An introduction to Analytic geometry from the modern point of view. Offered in alternate years. Given in 1919–1920.

Prerequisite—Mathematics 6. *3 Rec. per week. 1st S.*

12. Advanced Analytic Geometry. Mr. Garabedian. D.H.

A continuation of Mathematics 11. Offered in alternate years. Given in 1919–1920.

Prerequisite—Mathematics 11. *3 Rec. per week. 2d S.*

14. Surveying. Mr. Pierce. D.H.

Theory, use and adjustment of the chain, level and transit. Field work consists in measuring distances, angles and areas with the chain; establishing bench marks, running profiles, grade lines and cross sections with the level; finding areas, stadia measurements and laying out simple curves by deflection angles with the transit. For Engineering Seniors. Elective for Arts and Science Seniors.

Prerequisite—Mathematics 6 and Drawing 51. *3 Lab. per week. 2d S.*

22. Trigonometry.
I. Assoc. Prof. Steck. D.H.
II. Mr. Garabedian. D.H.
III. Mr. Pierce. D.H.

The elements of plane trigonometry. For Agricultural Freshmen.
3 Rec. per week. 2d S.

23. Surveying. Mr. Pierce. D.H.

Theory and use of the chain, level and transit. The field work consists in measuring distances, angles and areas with the chain; establishment of bench marks, running profiles, grade lines and cross sections with the level; method of finding areas and stadia measurements with the transit. For Agricultural Sophomores. Not given in 1918–1919.

Prerequisite—Mathematics 1 or 22. *3 Lab. per week. 1st S.*

Math. 102. Shop Mathematics. Prof. Steck. 2–49 D.H.

Applications of algebra, geometry and trigonometry to practical shop problems. For Freshmen taking Architectural, Electrical and Mechanical Construction. *3 Rec. per week. 2d S.*

Math. 104. Practical Mathematics. Prof. Steck. 2–49 D.H.

Selected topics from algebra and analytic geometry with applications to practical problems. For Freshmen taking Architectural, Electrical and Mechanical Construction. *3 Rec. per week. 2d S.*

MECHANICAL ENGINEERING.

PROF. PORTER, MR. GETCHELL.

52. Mechanics of Engineering. Prof. Porter. 2–45 D.H.

Principles of pure mechanics as applied to engineering structure involving composition forces, analytics and graphics. Conditions of equilibrium, center of gravity, moment of inertia, strength of materials, riveted joints. For Electrical and Mechanical Sophomores.

Prerequisite—Mathematics 5. *3 Rec. per week. 2d S.*

58. Thermodynamics. Prof. Porter. 2–45 D.H.

A study of the laws of thermodynamics and the thermodynamic properties of steam and gases. Their application to steam, gasoline engines, theory of refrigeration, and injectors. Required for Electrical Engineering and Mechanical Engineering Juniors.

Prerequisite—Mathematics 5. *3 Rec. per week. 2d S.*

59. Mechanical Laboratory.

Prof. Porter, Mr. Getchell. 0–24 D.H.

Physical tests of iron, steel, concrete, timber, calibration of instruments used in testing and finding the efficiency of simple machines. For Electrical Engineering and Mechanical Engineering Juniors. Fee, $1.50.

Prerequisite—Mechanical Engineering 52.

1 Rec. 1 Lab. per week. 1st S.

60. Mechanical Laboratory. Prof. Porter, Mr. Getchell. 0–24 D.H.

Analysis of coal, oil, gas, setting of valves, testing of water meters and hydraulic meters, calibration of a wier notch. Electrical Engineering and Mechanical Engineering Juniors. Continuation of Mechanical Engineering 59. Fee, $1.50. *1 Rec., 1 Lab. per week. 2d S.*

62. Hydraulics. Mr. Getchell. 2–45 D.H.

The mechanics of liquids, principle of fluid pressures, stability of structures, flow of liquids, methods and measurement of streams, and quantities of water by means of floats, wiers and metres and the fundamental principles of hydraulic machinery. For Electrical Engineering and Mechanical Engineering Juniors.

Prerequisite—Mechanical Engineering 69. 3 Rec. per week. 2d S.

63. Materials of Construction. Mr. Getchell. 2–45 D.H.

A study of the manufacture, properties and uses of iron, steel, brass, bronze, wood, brick, cement and concrete. For Electrical Engineering and Mechanical Engineering Juniors and Chemical Engineering Seniors.

Prerequisite—Mechanical Engineering 52. 2 Rec. per week. 1st S.

64. Machine Design. Mr. Getchell. 2–48 D.H.

Study of the elements of machines, design of fastening joints, gearing, belting, lubrication, machine frames and attachments. The work in the drafting room consists of the actual design of cranes, punches and machine parts. For Electrical Engineering and Mechanical Engineering Juniors.

Prerequisite—Mechanical Engineering 69.

2 Rec., 2 Lab. per week. 2d S.

65. Mechanical Engineering Laboratory.

Prof. Porter, Mr. Getchell. 0–24 D.H.

Tests of gasoline and steam engine pumps, air compressors, boilers and a study of their operation. Continuation of Mechanical Engineering 60. For Electrical Engineering and Mechanical Engineering Seniors. Fee, $1.50. *1 Rec., 1 Lab. per week. 1st S.*

66. Mechanical Laboratory. Prof. Porter, Mr. Getchell. 0–24 D.H.

A continuation of Mechanical Engineering 65. For Mechanical Engineering Seniors. Fee, $2.00. *1 Rec., 2 Lab. per week. 2d S.*

68. Advanced Design. Prof. Porter. 2–40 D.H.

Design of steam boiler plants and the lay-out of piping for the said plant. Selection of types of boilers and equipment for power plants. The lay-out and equipment for factories. For Mechanical Engineering Seniors.

Prerequisite—Mechanical Engineering 73. 3 Lab. per week. 2d S.

69. Mechanics of Engineering. Prof. Porter. 2–45 D.H

Principles of mechanics as applied to design of beams, columns plain and reinforced concrete construction, principles of dynamics a applied to the design of fly wheels and moving parts of machines. Fo Electrical Engineering and Mechanical Engineering Juniors.

Prerequisite—Mechanical Engineering 52. *5 Rec. per week. 1st S*

70. Thermodynamics. Prof. Porter. 2–45 D.H

A study of thermodynamics and thermodynamic properties of stear and gases and their application to problems in chemical engineerin Required for Chemical Engineering Seniors. *2 Rec. per week. 2d S*

72. Manual Training. Prof. Porter. 2–45 D.H

A study of the purpose of manual training work, of the proper method of teaching, and of the equipment of manual training schools. Fo Mechanic Arts Seniors. *1 Rec. per week. 2d S*

73. Power Plant Engineering. Prof. Porter. 2–45 D.H

A study of fuels, theory of combustion, various types of boilers, engine and prime movers, full equipment of power plants, and the design o chimneys and cooling towers for Electrical Engineering and Mechanica Engineering Seniors.

Prerequisite—Mechanical Engineering 58. *4 Rec. per week. 1st S*

74. Kinematics of Machinery. Mr. Getchell. 2–45 D.H

Study of mechanisms, location of virtual centers, construction o velocity and acceleration diagrams, design of gears and linkages. Fo Electrical Engineering and Mechanical Engineering Sophomores.

Prerequisite—Drawing 53. *2 Lab. per week. 2d*

77. Valve Gears and Boiler Design. Mr. Getchell. 2–40 D.H

A study of various types of valves used in steam engines, the uses o Bilgram and Zeuner valve diagrams, the design of a Corliss valve gea and the complete design of return tubular boilers. Required for Electr cal Engineering and Mechanical Engineering Juniors.

Prerequisite—Mechanical Engineering 52. *2 Lab. per week. 1st*

78. Industrial Engineering. Prof. Porter. 2–45 D.H

A study of factory conditions, safety devices, sanitation, lightin ventilation, fire prevention, methods of keeping costs and methods supervision of factories. For Mechanical Engineering Seniors.

Prerequisite—Mechanical Engineering 73. *3 Rec. per week. 2d*

79. Heating and Ventilation. Prof. Porter. 2–45 D.H

Computation of air requirements, heat losses, design of heating a ventilation systems, location of apparatus, lay-out of piping, low pre sure district heating systems. For Mechanical Engineering Seniors.

Prerequisite—Mechanical Engineering 64.

2 Rec., 2 Lab. per week. 1st

M.E. 102. Mechanics. Prof. Porter. 2–45 D.H.

Principles of pure mechanics as applied to engineering structures involving composition of forces, analytics and graphics. Conditions of equilibrium, strength of materials, riveted joints. For Juniors taking Architectural, Electrical and Mechanical Construction.

3 Rec. per week. 2d S.

M.E. 103. Mechanics. Prof. Porter. 2–45 D.H.

A continuation of M.E. 102 with principles of mechanics as applied to design of beams, column, concrete construction, dynamics as applied to design of fly wheels and moving parts of machines. For Juniors taking Architectural, Electrical and Mechanical Construction.

3 Rec. per week. 1st S.

M.E. 104. Boilers and Engines. Prof. Porter. 2–45 D.H.

A study of fuels, theory of combustion, various types of boilers, engines and prime movers, design of chimneys and cooling towers. For Juniors taking Electrical and Mechanical Construction.

3 Rec. per week. 2d S.

M.E. 105. Mechanical Laboratory. Mr. Getchell. 0–24 D.H.

Testing materials that enter into building construction, and construction of machines. For Juniors taking Electrical and Mechanical Construction. Fee, $1.00. *1 Lab. per week. 1st S.*

M.E. 106. Mechanical Laboratory. Mr. Getchell. 0–24 D.H.

Course in testing gages, flue gas analysis, calorimeters, brake tests on steam and gas engines. For Juniors taking Electrical and Mechanical Construction. Fee, $1.50. *1 Rec., 1 Lab. period per week. 2d S.*

M.E. 108. Machine Design. Mr. Getchell. 2–40 D.H.

Design of machine parts, and complete design of punch or shear. For Seniors taking Electrical and Mechanical Construction.

2 Lab. periods per week. 2d S.

M.E. 109. Boiler Design and Graphics. Mr. Getchell. 2–40 D.H.

Complete design of tubular boiler with application of principles of mechanics. For Juniors taking Electrical and Mechanical Construction. *2 Lab. periods per week. 1st S.*

M.E. 111. Mechanical Laboratory. Mr. Getchell. 0–24 D.H.

Continuation of 106. For Seniors taking Mechanical Construction. Fee, $1.50. *1 Rec., 1 Lab. per week. 1st S.*

M.E. 113. Hydraulics. Prof. Porter. 2–48 D.H.

The mechanics of liquids, principle of fluid pressure, stability of structures, flow of liquids, methods and measurement of streams, and quantities of water by means of floats, wiers and meters and the fundamental principles of hydraulic machinery. For Seniors taking Electrical and Mechanical Construction. *2 Rec. per week. 1st S.*

METEOROLOGY.

PROF. PETTEE.

1. Meteorology. Prof. Pettee. 206 T.H.

Recitations and lectures on wind systems, precipitation, humidity laws of storms and tornadoes and methods of prediction of atmospheric changes. For Agricultural Seniors. Elective for Arts and Science students.

Prerequisite—Elementary Physics. *2 Rec. per week. 1st S*

MILITARY ART.

CAPT. KERNAN.

Unless excused by proper authority, all male students are required to complete two years' satisfactory work in military art.

Course of Training for Infantry Units of the Senior Division.

1. Military Art. Capt. Kernan. Armory

Three hours a week.

(*a*) Practical. Weight 10.

Physical drill (Manual of Physical Training—Koehler); Infantry drill (U. S. Infantry Drill Regulations), to include the School of the Soldier, Squad and Company, close and extended order Preliminary instruction sighting position and aiming drills gallery practice, nomenclature and care of rifle and equipment

(*b*) Theoretical. Weight 4.

Theory of target practice, individual and collective (use of landscape targets made up by U. S. Military Disciplinary Barracks Fort Leavenworth, Kans.); military organization (Tables o Organization); map reading; service of security; persona hygiene.

2 Credit hours. 1 Rec., Balance Drill. 1st S

2. Military Art. Capt. Kernan. Armory

Three hours a week.

(*a*) Practical. Weight 10.

Physical drill (Manual of Physical Training—Koehler); Infantr drill (U. S. Infantry Drill Regulations), to include School c Battalion, special attention devoted to fire direction and contro ceremonies; manuals (Part V, Infantry Drill Regulations) bayonet combat; intrenchments (584–595, Infantry Drill Regulations); first-aid instruction; range and gallery practice.

(*b*) Theoretical. Weight 4.

Lectures, general military policy as shown by military history of United States and military obligations of citizenship; service of information; combat (to be illustrated by small tactical exercises); United States Infantry Drill Regulations, to include School of Company; camp sanitation for small commands.

2 Credit hours. 1 Rec., Balance Drill. 2d S.

. Military Art. Capt. Kernan. Armory.

Three hours a week.

(*a*) Practical. Weight 10.

The same as course 2 (*a*). Combat firing, if practicable, but collective firing should be attempted in indoor ranges by devices now in vogue at United States Disciplinary Barracks.

(*b*) Theoretical. Weight 4.

United States Infantry Drill Regulations, to include School of Battalion and Combat (350–622); Small-Arms Firing Regulations; lectures as in (*b*) course 2; map reading; camp sanitation and camping expedients.

2 Credit hours. 1 Rec., Balance Drill. 1st S.

. Military Art. Capt. Kernan. Armory.

Three hours a week.

(*a*) Practical. Weight 10.

The same as course 2 (*a*); signaling; semaphore and flag; first-aid. Work with sand table by constructing to scale intrenchments, field works, obstacles, bridges, etc. Comparison of ground forms (constructed to scale) with terrain as represented on map; range practice.

(*b*) Theoretical. Weight 4.

Lectures, military history (recent); service of information and security (illustrated by small tactical problems in patrolling, advance guards, rear guards, flank guards, trench and mine warfare, orders, messages, and camping expedients); marches and camps (Field Service Regulations and Infantry Drill Regulations).

2 Credit hours. 1 Rec., Balance Drill. 2d S.

. Military Art. Capt. Kernan. Armory

Five hours a week.

(*a*) Practical. Weight 13.

Duties consistent with rank as cadet officers or non-commissioned officers in connection with the practical work and exercises laid down for the unit or units. Military sketching.

(*b*) Theoretical. Weight 11.
Minor tactics; field orders (studies in minor tactics, Unit States School of the Line); map maneuvers. Weight 8.
Company administration, general principles (papers and return Weight 1.
Military history. Weight 2.

3 Credit hours. 2 Rec., Balance Drill. 1st

6. Military Art. Capt. Kernan. Armo
Five hours a week.
(*a*) Practical. Weight 13.
Same as (*a*) course 5. Military sketching.
(*b*) Theoretical. Weight 11.
Minor tactics (continued); map maneuvers. Weight 8.
Elements of international law. Weight 2.
Property accountability; method of obtaining supplies and equ ment (Army Regulations). Weight 1.

3 Credit hours. 2 Rec., Balance Drill. 2d

7. Military Art. Capt. Kernan. Armo
Five hours a week.
(*a*) Practical. Weight 13.
Duties consistent with rank as cadet officers or non-commissior officers in connection with the practical work and exerci scheduled for the unit or units. Military sketching.
(*b*) Theoretical. Weight 11.
Tactical problems, small forces, all arms combined; map man vers; court-martial proceedings (Manual for Courts-martial)
International relations of America from discovery to present d gradual growth of principles of international law embodied American diplomacy, legislation, and treaties.
Lectures: Psychology of war and kindred subjects.
General principles of strategy only, planned to show the intim relationship between the statesman and the soldier (not exceed 5 lectures).

3 Credit hours. 2 Rec., Balance Drill. 1st

8. Military Art. Capt. Kernan. Armo
Five hours a week.
(*a*) Practical. Weight 13.
Same as course 7 (*a*).
(*b*) Theoretical. Weight 11.
Tactical problems (continued); map maneuvers. Rifle in wa
Lectures on military history and policy.

3 Credit hours. 2 Rec., Balance Drill. 2d

It is presumed that each member of the Reserve Officers' Training Corps will have taken before graduation at least one course or equivalent credit in either French, or German, or Spanish.

Special courses can no doubt be arranged from time to time to assist in developing specialists for duties other than those prescribed for reserve officers of the mobile arms.

MINERALOGY.

PROF. JAMES, MR. SMITH.

54. **Mineralogy.** Mr. Smith. 204 C.H.

A short subject in blowpipe analysis, followed by laboratory practice in the determination and study of minerals, with special reference to their economic value. For Chemical Sophomores. Elective for Agricultural and Arts and Science Juniors.

Prerequisites—Chemistry 51 and 52. *2 Lab. per week. 2d S.*

PHYSICAL EDUCATION FOR WOMEN.

MISS SHEA.

Unless excused by proper authority, all women students are required to complete three years' work in physical education. One hour credit is given for each subject completed.

1. **Physical Education.** Miss Shea. 303 T.H.

For Freshmen. General developing exercises, corrective gymnastics. Games. *Two exercises per week. 1st S.*

2. **Physical Education.** Miss Shea. 303 T.H.

For Freshmen. Continuation of Physical Education 1. Folk Dancng. *Two exercises per week. 2d S.*

3. **Physical Education.** Miss Shea. 303 T.H

For Sophomores. Educational gymnastics. Recreative games. *Two exercises per week. 1st S.*

4. **Physical Education.** Miss Shea. 303 T.H.

For Sophomores. Continuation of Physical Education 3. Aesthetic dancing. *Two exercises per week. 2d S.*

5. **Physical Education.** Miss Shea. 303 T.H.

For Juniors. Advanced gymnastics, aesthetic and folk dancing. *Two exercises per week. 1st S.*

6. **Physical Education.** Miss Shea. 303 T.H.

For Juniors. Continuation of Physical Education 5. *Two exercises per week. 2d S.*

7. Physical Education. Miss Shea. 303 T.

For Seniors. Advanced gymnastics and practical massage.

Two exercises per week. 1st

8. Physical Education. Miss Shea. 303 T.

For Seniors. Continuation of Physical Education 7.

Two exercises per week. 2d

In the spring work will consist of games, hikes, etc., and will be carri on out of doors.

PHYSICS.

PROF. SUYDAM, MR. MORAN.

51. Mechanics and Heat. Prof. Suydam. 2-46 D.

Lectures, illustrated by experiments, with notebooks to be hand in at intervals and occasional written quizzes. As little mathemati is used as is consistent with the proper interpretation of the lectu experiments. For Agricultural and Mechanic Arts Sophomor Elective for Arts and Science students.

2 Lec. per week. 1st

52. Magnetism and Electricity. Prof. Suydam. 2-46 D.

A continuation of Physics 51. *2 Lec. per week. 2d*

53. General Physics. *Mechanics and Heat.*

Prof. Suydam, Mr. Mora

Lectures, recitations and laboratory practice. Analytical geomet and calculus are prerequisites or parallel subjects. For Mechanical a Electrical Sophomores and Chemical Juniors. Elective for Arts a Science students. *2 Lec., 2 Rec., 2 Lab. per week. 1st*

54. General Physics. *Electricity, Magnetism, Sound and Light.*

Prof. Suydam, Mr. Mora

A continuation of course 53.

Prerequisite—Physics 53. 2 Lec., 2 Rec., 2 Lab. per week. 2d

NOTE.—The following fees or deposits are required at the beginning of a semester part of a semester: for notes, not returnable, Physics 51, 52—50c.; Physics 59—40 for notes and damage, balance returnable at end of semester, Physics 57, 58, 59—$1.0 Physics 53, 54—$1.00

NOTE.—Students desiring to be recommended as High School Physics teachers m pass with grade of 85 in Physics 51, 52, or with a grade of 80 in Physics 53, 54.

57. Household Physics. Prof. Suydam. 1-35, 2-46 D.

A general treatment of the physical principles underlying the oper tion of household appliances: Plumbing, heating and ventilatin isolated rural plants, electrical appliances and installations. For Hor Economics Sophomores.

Prerequisite—Physics 58. 2 Lec., 1 Lab. per week. 1st

58. Elementary Physics and Practice. Mr. Moran. 1–35, 2–46 D.H.

General physics for students who do not desire mathematical work, but need a study of principles, with laboratory applications. For Mechanic Arts Sophomores and Home Economics Freshmen. Elective for Arts and Science students. *2 Rec., 1 Lab. per week. 2d S.*

59. Elementary Optics and Photographic Instruments.
Mr. Moran. 1–35, 2–46 D.H.

Designed for students who wish to use optical and photographic apparatus intelligently. Lectures on fundamental principles of light, images, color and photometry, and on practical visual, projection and photographic lenses and other apparatus; with experimental illustrations. (Not devoted to photographic chemistry, developers, etc.) Stencil notes will be used. Elective for all students, except Freshmen and Two Year students in the first year.
2 Lab., 2 Lec. per week. 1st S.

Physics 102. Heating and Ventilating, Plumbing, Electrical Appliances, Isolated Domestic Plants. Prof. Suydam. 2–46 D.H.

This course comprises a study of the theory and principles of plumbing, plumbing laws and plumbing installation; steam, hot water and hot air heating systems; the theory and operation of heating plants and methods of installation; principles of illumination, house wiring, and installation of domestic electrical appliances; isolated plants in rural suburban districts; which includes heating, lighting, power, plumbing and sewage disposal and problems peculiar to small plants. For Juniors taking Architectural Construction. *2 Lec., 1 Lab., 2d S.*

POLITICAL SCIENCE.

PROF. SCOTT.

2. Laws of Business. Prof. Scott. 202 Lib.

Recitations supplemented by the discussion of cases. Elective for Arts and Science Sophomores, Mechanic Arts Juniors and Seniors and Agricultural Seniors. *3 Rec. per week. 2d S.*

3. American Constitutional Law. Prof. Scott. 202 Lib.

Recitations, supplemented by a study of the decisions of the United States Supreme Court. Special attention is given to the connection between American constitutions and American political history. Elective for Arts and Science and Mechanic Arts Juniors and Seniors and Agricultural Seniors. *3 Rec. per week. 1st S.*

POULTRY HUSBANDRY.

PROF. RICHARDSON.

Poultry 2. Farm Poultry. Prof. Richardson. 202 M.H

Subject treats general considerations, houses and appliances, typ of poultry, fattening and marketing, caponizing, principles of breedin feeding, incubation and brooding, sanitation, diseases and parasites, an poultry management. For Agricultural Sophomores.

2 Lec., 1 Lab. per week. 2d S

Poultry 3. Poultry Judging. Prof. Richardson. 202 M.H

Subject includes a study of the origin and history of breeds and vari ties. A discussion of poultry organizations and poultry shows. Elec ive. *2 Lec., 1 Lab. per week. 1st S*

Poultry 6. Home Poultry. Prof. Richardson. 202 M.H

A study of poultry with reference to the home. A discussion of facto bearing on production of eggs and table birds. A study of the grad and quality of eggs and poultry. Preparation of fowl for roasting, fryin etc. Elective for Home Economics and Arts and Science Juniors an Seniors. *2 Lec. per week. 2d S*

Poultry 61. Prof. Richardson. 202 M.H

In this subject are discussed the location of a poultry farm, poultr buildings, poultry house construction, types and breeds of poultr caponizing, killing and dressing, and fattening. Elective for Agricu tural Seniors. *2 Lec., 1 Lab. per week. 1st S*

Poultry 62. Prof. Richardson. 202 M.H

This covers the subjects of poultry foods and feeding, incubatio brooding, markets, poultry diseases, and poultry farm problems. Elec ive for Agricultural Seniors. *2 Lec., 1 Lab. per week. 2d S*

PSYCHOLOGY.

PROF. SIMMERS.

52. Introduction to Psychology. Prof. Simmers. 211 T.H

A rapid survey of the physiological bases of behavior, is followed by more detailed study of the fundamental facts of mind or human behavio chiefly as exhibited by the normal individual working under normal co ditions. The principles of the science are related as closely as possibl to the concrete experiences of the student. Required of Manual Ar and Home Economics Sophomores, and Agricultural Juniors. Electiv for all other students. Must be taken by those who wish to elect othe subjects in psychology. Lectures, assigned readings and discussio Sophomore subject. *3 Rec. per week. 2d S*

53. Psychology of the Adolescent. Prof. Simmers. 211 T.H.

A study is made of the growth and development of the physical, psychic, intellectual, moral, social and religious nature of the adolescent boy and girl. The aim is to develop in the students a clearer insight into the nature of youth, particularly those of high school age, so they can be dealt with in a more sympathetic and helpful manner. Required of Home Economics Juniors, and Manual Arts and Agricultural Seniors. Elective for all other students. Lectures, assigned readings and discussion. Junior subject.

Prerequisite—Psychology 52. *3 Rec per week. 1st S.*

SHOP WORK.

PROF. PORTER, MR. BATCHELDER AND MR. MCBRIDE.

51. Wood Work. Mr. Batchelder. Second Floor of Shop.

Instruction in the use and care of wood working tools, and machinery in the wood shop, exercises in making joints of various types, and pattern making for Engineering Mechanic Arts Freshmen. Elective for Arts and Science Freshmen. Fee, $1.50. *2 Lab. per week. 1st S.*

52. Wood Work. Mr. Batchelder. Second Floor of Shop.

Continuation of Shop 51. Is arranged to teach students taking Mechanic Arts Course, cabinet making, and its application to manual training. For Mechanic Arts Freshmen. Fee, $1.50.

Prerequisite—Shop 51. *2 Lab. per week. 2d S.*

54. Wood Work. Mr. Batchelder. Second Floor of Shop.

Instruction in the care and use of tools in the carpenter shop, making of simple joints and frames, saw filing and the making of handles, single trees and other implements of wood used upon the farm. For Agricultural Juniors. Fee, $1.50. *2 Lab. per week. 2d S.*

55. Forging. Mr. McBride. First Floor of Shop.

This is a study of the forging of iron and steel and is designed to teach the operations of drawing, upsetting, welding, twisting, splitting and punching. A study is made of the construction, care and management of the forge and instruction given in tempering, case hardening and annealing. For Agricultural Juniors. Fee, $1.50.

2 Lab. per week. 1st S.

57. Forging. Mr. McBride. First Floor of Shop.

This is a study of the forging of iron and steel and is designed to teach the operation of drawing, upsetting, welding, twisting, splitting, and punching. A study is made of the construction, care and manage-

ment of the forge and instruction given in tempering, case hardening and annealing. For Electrical and Mechanical Sophomores. Fee, $1.50.

2 Lab. per week. 1st S.

59. Wood Work. Mr. Batchelder. Second Floor of Shop.

The use and care of wood turning tools and machinery, exercises upon wood turning lathes and cabinet making. For Mechanic Arts Sophomores. Fee, $2.00.

Prerequisite—Shop 52. *3 Lab. per week. 1st S.*

60. Wood Work. Mr. Batchelder. Second Floor of Shop.

Continuation of Shop 59. More complicated cabinet work and finishing same. For Mechanic Arts Sophomores. Fee, $2.00.

3 Lab. per week. 2d S.

62. Machine Work. Mr. McBride. First Floor of Shop.

Exercises in bench work, chipping, filing and scraping and laying out of work from drawings; a study of cutting edges and tool adjustments best suited for different metals together with a study of cutting speeds and feeds. Practice in operating the principal machine tools, such as the shaper, lathe, drill press, planer and milling machine. For Electrical and Mechanical Sophomores. Fee, $1.50.

2 Lab. per week. 2d S.

63. General Machine Work. Mr. McBride. First Floor of Shop.

A continuation of Shop 62. For Electrical and Mechanical Juniors.

2 Lab. per week. 1st S.

64. Manufacturing. Mr. McBride. First Floor of Shop.

Machine work, construction and use of jigs and special fixtures; use of limit gauges, special tools, turret and screw machinery; manufacture of some simple machine, using special appliances. Elective for Electrical and Mechanical Juniors. Fee, $1.50. *2 Lab. per week. 2d S.*

65. Wood Work. Mr. Batchelder. Second Floor of Shop.

This subject is laid out to teach students exercises that are suitable for manual training in secondary schools. For Mechanic Arts Juniors. Fee, $1.50. *2 Lab. per week. 1st S.*

66. Forge Work. Mr. McBride. First Floor of Shop.

This is a study of the forging of iron and steel and is designed to teach the operation of drawing, upsetting, welding, twisting, splitting, and punching. A study is made of the construction, care and management of the forge and instruction given in tempering, case hardening and annealing. For Mechanic Arts Juniors. Fee, $1.50.

3 Lab. per week. 2d S.

67. Manual Training Practice. Mr. Batchelder. Second Floor of Shop.

Exercises in teaching under direction of wood shop instructor. For Mechanics Arts Seniors. *2 Lab. per week. 1st S.*

68. Machine Work. Mr. McBride. First Floor of Shop.

Exercises in bench work, chipping, filing and scraping and laying out of work from drawings; a study of cutting edges and tool adjustments best suited for different metals together with a study of cutting speeds and feeds. Practice in operating the principal machine tools, such as the shaper, lathe, drill press, planer and milling machine. For Chemical Juniors. Fee, $1.50. *2 Lab. per week. 2d S.*

69. Advanced Shop Work. Mr. Batchelder. Second Floor of Shop.

Advanced pattern making and foundry practice for Mechanical Seniors. Fee, $1.50. *2 Lab. per week. 1st S.*

71. Machine Work. Mr. McBride. First Floor of Shop.

Machine work arranged to meet the needs of students taking the Mechanic Arts Course for Teachers. For Mechanic Arts Seniors. Fee, $2.00. *3 Lab. per week. 1st S.*

72. Machine Work. Mr. McBride. First Floor of Shop.

A continuation of Shop 71. Fee, $2.00. *3 Lab. per week. 2d S.*

Shop. 101. Pattern Making. Mr. Batchelder. Second Floor of Shops.

Exercises in the construction of solid, split and loose pieces patterns and core boxes, such as are found in ordinary practice in commercial pattern shops; practice in floor and bench moulding with different kinds of moulding sand, setting of cores and risers, methods of gating and venting. For Sophomores taking Electrical and Mechanical Construction. Fee, $2.00. *3 Lab. periods per week. 1st S.*

SOCIOLOGY.

PROF. GROVES.

51. Primitive Man and Social Origins. Prof. Groves. 201 Lib.

An elementary study of life of primitive man, the beginnings of human society and the factors that condition social evolution. The subject aims to introduce the student to a field of investigation of special value to the student of the social sciences. Special attention is given to the study of primitive social control. Ethnological readings are required.

Special attention will be given to the theories of human association. Lectures and recitations. *3 Rec. per week. 1st S.*

52. Social Pathology and Modern Philanthropy.

Prof. Groves. 201 Lib

This subject in modern social problems covers the following ground

A. Study of the nature, origin and proper treatment of dependent defective and delinquent classes, including an introduction to the theories of criminal anthropology.

B. Study of contemporary social problems and movements for socia betterment as reported in *The Survey.*

C. Thesis work on the part of the student based upon first-hand study of some concrete social problem.

Students are advised to complete Sociology 51 before electing this subject. Lectures and recitations. *3 Rec. per week. 2d S*

***53. Mental Defectives.** Prof. Groves. 201 Lib

A sociological study of mental defectiveness with special attention to the problem of social prophylaxis. Designed for students who plan to engage in social or educational work of an administrative or institutional character or who plan to do graduate work in the field of psychology or sociology.

Lectures and recitations.

Prerequisites—Psychology 52 and Sociology 51.

3 Rec. per week. 1st S

54. Rural and Community Sociology. Prof. Groves. 201 Lib

A study of the social significance, conditions and resources of American country life with the purpose of developing community leadership

Lectures and recitations. *3 Rec. per week. 2d S*

***55. Social Psychology.** Prof. Groves. 201 Lib

A study of the development and the characteristics of the social mind of man.

Lectures and recitations.

Prerequisite—Psychology 52. *3 Rec. per week. 1st S*

†56. An Introduction to General Sociology. Prof. Groves. 201 Lib

An advanced subject in the principles of sociology which aims to introduce the student to a systematic sociological interpretation of human association. It includes a study of the history of sociological thought, discussions of sociological principles and recent sociological literature. This subject is the most advanced offered by the department and is especially provided for those who are specializing in the social sciences. Thesis work is required.

Lectures and recitations.

Prerequisite—Any two subjects in sociology. *3 Rec. per week. 2d S*

* Sociology 53 and 55 are given in alternate years. Sociology 53 is offered in 1918–1919.

† Sociology 56 and 58 are given in alternate years. Sociology 58 is offered in 1918–191

***58. Social Ethics.** Prof. Groves. 201 Lib.

This subject in social ethics covers the following ground:

A. Origin and development of moral conceptions in savage society.

B. The study of representative altruistic thought of ethical significance.

C. The investigation by the seminar method of some ethical problem of importance in modern social life.

Lectures and recitations.

Prerequisite—Any two subjects in sociology. 3 Rec. per week. 2d S.

SPANISH.

PROF. WHORISKEY, MR. KELLY, MRS. PETTEE.

1. Elementary Spanish. Mr. Kelly, Mrs. Pettee. 102 T.H.

Elements of Spanish grammar. Reading of simple stories; conversation and dictation. Elective for Arts and Science students.

3 Rec. per week. 1st S.

2. A Continuation of Spanish 1. Mr. Kelly, Mrs. Pettee. 102 T.H.

Prerequisite—Spanish 1. 3 Rec. per week. 2d S.

3. Spanish Prose. Mr. Kelly. 102 T.H.

Reading and translation, conversation, composition.

Prerequisite—Spanish 2. 3 Rec. per week. 1st S.

4. A Continuation of Spanish 3. Mr. Kelly. 102 T.H.

Prerequisite—Spanish 3. 3 Rec. per week. 2d S.

ZOÖLOGY.

PROF. JACKSON, MR. BEAN.

The subjects in zoölogy are arranged in sequence as follows: Arts and Science students desiring a general scientific knowledge of the subject should elect from group A, B and D with optional elections in C. Students who do not intend to specialize in zoölogy may elect from group A or B. Those students intending to teach the subject of zoölogy or who are contemplating entering the medical profession should consult the head of the department as to the sequence of subjects. However, any subject offered may be taken by students who have completed the required prerequisites.

Group A. Systematic Zoölogy.

51. General Zoölogy. Prof. Jackson, Mr. Bean. 212 T.H.

A detailed study of the fundamental principles of life; the nature and physiology of protoplasm; the structure of the cell and the processes

* Sociology 56 and 58 are given in alternate years. Sociology 58 is offered in 1918–1919.

of cell division. The structure and physiology of the tissues will be discussed and their occurrence in the different phyla of the animal kingdom. There will then follow a discussion of the different organs and systems of the body, their function and modification in the different types of animals. For Agricultural and Home Economics Freshmen. Elective for Arts and Science and Mechanic Arts Freshmen.

2 Lec., 1 Lab. per week. 1st S.

52. General Zoölogy. Prof. Jackson, Mr. Bean. 212 T.H.

The structure, habits, physiology and life history of the different types of animals will be discussed. The economic aspect will be emphasized so far as possible and their importance and relation to man. The laboratory work will consist of the study and dissection of type forms. For Agricultural Freshmen. Elective for Arts and Science, Home Economics and Mechanic Arts students.

Prerequisite—Zoölogy 51. *2 Lec., 1 Lab. per week. 2d S.*

53. Faunal Zoölogy (Invertebrate). Prof. Jackson. 212 T.H.

A study of the habits, life history and identification of local invertebrate animals exclusive of the insects. The study is entirely systematic and is primarily for students intending to teach zoölogy.

Prerequisites—Zoölogy 51 and 52. *1 Report, 2 Lab. per week. 1st S.*

54. Faunal Zoölogy (Vertebrate). Prof. Jackson. 212 T.H

A study of the habits, life history and identification of local vertebrate animals exclusive of the birds. The student will be expected to become familiar with the majority of our local vertebrate animals. The work is primarily for students intending to teach zoölogy.

Prerequisites—Zoölogy 51 and 52. *1 Report, 2 Lab. per week. 2d S*

55. Systematic Entomology. Prof. Jackson. 212 T.H

A laboratory subject consisting of the collection and identification o insects without regard to their economic importance. This is primarily for students of entomology. It is suggested that students electing this subject collect insects during the summer.

Prerequisites—Zoölogy 51 and 52. *1 Report, 2 Lab. per week. 1st S*

56. Ornithology. Prof. Jackson. 212 T.H

A study of the classification, identification and economic importance of the birds. The object of the study is to enable students to identify birds at sight and to become familiar with their economic importance.

Prerequisites—Zoölogy 51 and 52. *1 Lec., 2 field trips per week. 2d S*

Group B. Physiology, Hygiene and Sanitation.

58. Human Anatomy and Physiology. Mr. Bean

This course is divided into two distinct parts. The earlier hours ar given over entirely to the science of anatomy, both comparative an

human, and the laboratory work is so correlated with the lectures, as to acquaint the student with all of the most important structures and anatomical relations of organs and systems of the human body. The second part of the work is devoted entirely to the science of physiology. The fundamental principles of human physiology are discussed in the lectures, while physical and chemical demonstrations, and comparative methods constitute the laboratory work. For Home Economics Freshmen, elective for Arts and Science Freshmen and Sophomores. Written reports and library assignments required.

Prerequisite—Zoölogy 51. *2 Lec., 1 Lab. per week. 2d S.*

59. Hygiene and Sanitation. Prof. Jackson, Mr. Bean. 212 T.H.

A study of the fundamental principles of hygiene and sanitation. The nature of disease and method of maintaining the coördination of the body will be discussed, and practical methods of improving the efficiency of the human machine. For Home Economics students. Elective for Agricultural and Arts and Science Sophomores, Juniors and Seniors.

Prerequisite—Zoölogy 51. *2 Lec., 1 Lab. per week. 1st S.*

60. Advanced Sanitation. Prof. Jackson, Mr. Bean. 212 T.H.

A continuation of Zoölogy 59, dealing with various phases of industrial and home sanitation. The nature of wound infection, antiseptics and disinfectants, the ventilation of buildings, shops, etc., water supplies and other topics of a practical nature, will be discussed. Frequent written reports.

Prerequisites—Zoölogy 51 and 59. *2 Lec., 1 Lab. per week. 2d S.*

61. Embryology. Mr. Bean. 201 T. H.

A detailed study of the vertebrate embryo, its method of development and the relation of the embryo to the parent. The laboratory work will be primarily with the frog and chick embryo. The lectures will include human embryology. Zoölogy 67, histology, may be taken parallel with embryology.

Prerequisites—Zoölogy 51, 52, 57 and 67.

1 Lec., 2 Lab. per week. 1st S.

62. Advanced Neurology. Mr. Bean. 201 T.H.

A study of the structure and physiology of the human nervous system. The laboratory work will consist of a study of the different types of neurons, the nature of nervous impulses and a detailed study of the nerve tract in the brain and spinal column. The subject is primarily adapted for students of psychology.

Prerequisites—Zoölogy 51 and 57. *1 Lec., 2 Lab. per week. 2d S.*

Group C. Philosophical Zoölogy.

NOTE.—Students are advised to elect Geology 51, Elementary Geology, before taki Zoölogy 64, as the Geology will furnish an excellent background for the work in evo tion.

64. Evolution and Genetics. Prof. Jackson. 212 T.

Lectures dealing with the various problems of evolution, heredity a eugenics. A detailed study of the mechanical basis of heredity a variation with the various theories of evolution, the factors of evolutic inheritance of human characteristics, heredity and disease and otl practical problems will be discussed. For Home Economics Junio Elective for Agricultural and Arts and Science Juniors and Senio Written reports and reviews required.

Prerequisite—Zoölogy 51. *3 Lec. per week. 2d*

Group D. Anatomical Zoölogy.

65. Comparative Anatomy of the Invertebrates. Mr. Bean. 203 T.

A detailed study of the structure of different types of invertebr animals exclusive of insects. The subject is primarily for students tending to teach zoölogy.

Prerequisites—Zoölogy 51 and 52. 1 Report, 2 Lab. per week. 1st

66. Comparative Anatomy of the Vertebrates. Mr. Bean. 203 T.

A detailed study of the structure of different types of vertebrate a mals. Primarily for students intending to teach zoölogy.

Prerequisites—Zoölogy 51 and 52. 1 Report, 2 Lab. per week. 1st

67. Histology. Mr. Bean. 203 T.

A detailed study of the structure of the tissues of vertebrate anima cell specialization and the manner in which tissues are combined i organs. The subject is primarily for students intending to teach zoöl and a great deal of attention will be paid to the technique of histology

Prerequisites—Zoölogy 51, 52 and 57. 1 Report, 2 Lab. per week. 1s

68. Insect Anatomy. Prof. Jackson. 203 T.

A study of the anatomy of different types of insects. Especia adapted for students in entomology.

Prerequisites—Zoölogy 51, 52 and 55. 1 Report, 2 Lab. per week. 2d

Group E. Advanced Zoölogy.

69. Advanced Zoölogy. Prof. Jackson. 202 T.

Arranged to suit the needs of those who wish to specialize in zoölo This subject may not be elected except by students who have comple at least 18 hours in zoölogy or entomology with an average mark o least 80 and then only on the presentation of the detailed outline of e

roblems they wish to study. The subject is primarily for graduate tudents. Open only to students by special permission.

Credit and hours to be arranged. 1st S.

o. **Advanced Zoölogy.** Prof. Jackson. 202 T.H.

A continuation of Zoölogy 69. The subject can only be elected under he above restrictions. Open only to students by special permission.

Credit and hours to be arranged. 2d S.

1. **Vocational Zoölogy.** Prof. Jackson. 202 T.H.

A discussion of the principles of teaching zoölogy and the application f zoölogy to other lines of work. Practical work will be under the irect supervision of the head of the department. Lectures will deal vith the method of presenting the subject; the adaptation of the sub- ect to meet the special requirements of high schools and colleges; nethods of grading laboratory work and examination papers and general aboratory and class administration. The application of zoölogy to arious government positions will also be discussed. Only students vho have shown special proficiency in zoölogy may elect this subject. Open only to students by special permission.

1 Report, 2 Lab. per week. 1st S.

2. **Vocational Zoölogy.** Prof. Jackson. 202 T.H.

A continuation of Zoölogy 71. The subject can only be elected under he above restrictions. Open only to students by special permission.

1 Report, 2 Lab. per week. 2d S.

THE TWO-YEAR COURSE IN AGRICULTURE

This course was established by the state legislature in 1895, and provides an opportunity to secure a training for their life work for those students who do not have the time money or preparation to take a four-year college course.

The course is especially arranged, and suited for the young, bright boys of the farm, who expect to make a business of some line of agricultural or horticultural work. Although it is open to students who have had no previous training on the farm, the entrance of such is not encouraged because of their lack of practical experience. By independent work and close application, however, inexperienced students sometimes pass the course with credit.

The year's work closes the middle of May, so as to enable the students to get home for the spring work on the farm or to accept other positions for the summer. This short school year also permits four months' time for those students who are dependent upon their own resources to earn money for the following year.

The courses of study and the classes of the two-year course are separate and distinct from those of the four-year courses. The work of the first year is largely preparatory being a study of the sciences underlying agriculture, together with some elementary agricultural and horticultural work. The second year contains optional studies so that it is possible for students to specialize in animal husbandry poultry, dairying, horticulture or forestry. Ten hours per week on the average are spent in practical work on the farm, in the barn, greenhouses, shops or forest.

Admission.—The course is open to those having a fair knowledge of reading, spelling, writing, arithmetic, English grammar, geography and history of the United States. Applicants under eighteen years of age, who do not present high school or other satisfactory certificates to show their

proficiency in these subjects, may be given entrance examinations on Tuesday afternoon and Wednesday morning of the opening week of college. Applicants who are over eighteen years of age will be admitted without examination.

Expenses.—The expenses of the course will vary with the taste and frugality of the students and the kind of accommodations which they secure. The total average expense for the year, if the student holds a scholarship, is not far from $300. Many students by working for their board or room rent, or by doing various kinds of work about the college or village, are able to go through the year with a cash outlay not exceeding $150. However, as a rule, such students are either men of exceptional physical alertness, or those who are quick to seize opportunity.

Graduation.—No degree is given at the end of the course, but a certificate of graduation is issued upon its completion or the completion of its equivalent.

Students graduating from the two-year course must present to the dean of the agricultural division on or before the second Tuesday preceding their graduation satisfactory evidence of having had practical experience in farm work, either through having lived on a farm for at least two years subsequent to the age of 12 or through having worked on a farm for at least four months subsequent to the age of 15.

Students graduating from this course in 1919 must have at least 74 credit hours.

TWO-YEAR COURSE OF STUDY.

(For details, see description of studies, which follows.)

First Year.

First Semester.	Credit Hours	Second Semester.	Credit Hours
Bot. 31, Elem. of Bot.	3	*A. H. 32*, Breeds of L. Stock	4
Dairy. 31, Farm Dairying	3	*Bot. 32*, Fung. Diseases of Plts.	2
Engl. 31, Gram. and El. Comp.	3	*Chem. 32*, El. Applications	2
Hort. 33, Fruit Growing	3	*Engl. 32*, Gram. and Comp.	3
Math. 31, Prac. Arith.	2	*Ent. 32*, Econ. Ent.	3
Mil. Art. 31	2	*For. 32*, Farm For.	2
Zoöl. 31, Hum. Phys. and Hyg.	3	*Mil. Art 32*	2
		Shop 32, Wood Work	2

Second Year.

First Semester.		Second Semester.	
Agr. 31, Farm Eng. and Soils	3	*Agron. 32*, Field Crops	3
**A. H. 35*, Anat. of Farm An.	3	**Agron. 34*, Manures and Fertilizers	2
**A. H. 39*, Poultry	3	**Agron. 36*, F. Manag. and Accounting	3
**Dairy. 33*, Butter Making	3	*A. H. 34*, Feeds and Feeding	3
**Dairy. 35*, Milk Production	3	**A. H. 36*, An. Diseases	3
Draw. 31, Agr. Draw	1	**A. H. 38*, An. Breeding	2
**For. 53*, Dendrology	3	**A. H. 40*, Poultry	3
**Hort. 31*, Veg. Gardening	3	**Dairy. 32*, Market Milk	3
**Hort. 35*, Greenhouse Manag.	3	**Dairy. 34*, Cheese and Ice Cream	3
Mil. Art 33	2	*Econ. 32*, El. Econ.	3
Phys. 31, El. Phys.	3	**For. 54*, For. Mensuration	3
Soc. 31, El. Social Sci.	3	**Hort. 32*, Home Decoration	3
		**Hort. 34*, Orchard Problems	2
		Mil. Art 34	2
		Shop 34, Iron Works	1

DESCRIPTION OF STUDIES.

AGRONOMY.

PROF. TAYLOR, ASST. PROF. PRINCE, MR. YOUNG.

31. Farm Engineering and Soils. Asst. Prof. Prince. 110 M.H.

This subject will include the mapping of farms, leveling for drains, a study of farm implements and of farm buildings; textbooks and recitations upon the formation, kinds and physical properties of soils. Practical exercises are given in map making, laying out drains, comparing farm machines, rope splicing and in physical experiments with soils. For Two-Year Students, Second Year.

2 Rec., 1 Lab. per week. 1st S.

* Elective. Elect courses to make a total of at least 18 hours.

32. Field Crops. Asst. Prof. Prince. 110 M.H.

Lectures and recitations on the culture, uses and value of the field crops grown in New England. Laboratory practice will include seed testing, seed identification, corn and potato judging, hay judging and a study of the different legumes, grasses and grains.

2 Lec., 1 Lab. per week. 2d S.

34. Manures and Fertilizers. Prof. Taylor. 110 M.H.

Textbook and recitations upon the constituents of farm manures and chemical fertilizers, the care and application of manures, the home-mixing of fertilizers and the modifications required by different soils and crops. Elective for Two-Year Students, Second Year.

2 Lec. per week. 2d S.

36. Farm Management and Accounting. Mr. Young. 110 M.H.

Textbook, lectures, and recitations upon different types of farming, size of farms, cropping systems, live stock problems, marketing farm products, choice of a farm, and farm records and accounts. Practical work in laying out farms; keeping cost accounts on farms; analyzing and organizing the farm business. Elective for Two-Year Students, Second Year. *2 Lec., 1 Lab. per week. 2d S.*

ANIMAL HUSBANDRY.

PROF. ECKMAN, MR. FAWCETT.

32. Types and Breeds of Live Stock. Mr. Fawcett. 301 M.H.

Similar to Animal Husbandry 51. For Two-Year Students, First Year. *3 Lec., 1 Lab. per week. 2d S.*

34. Feeds and Feeding. Prof. Eckman. 105 M.H.

Similar to Animal Husbandry 54. For Two-Year Students, Second Year. *2 Rec., 1 Lab. per week. 2d S.*

35. Anatomy of Farm Animals. Prof. Eckman. 105 M.H.

Similar to Animal Husbandry 55. Elective for Two-Year Students. *3 Rec. per week. 1st S.*

36. Animal Diseases. Prof. Eckman. 105 M.H.

Similar to Animal Husbandry 56. Elective for Two-Year Students. *Prerequisite—Animal Husbandry 35.* *3 Rec. per week. 2d S.*

38. Animal Breeding. Mr. Fawcett. 2 M.H.

A study of the principles and practices of animal breeding. Practice is given in tracing pedigrees. Elective for Two-Year Students, Second Year. *2 Rec. per week. 2d S.*

BOTANY.

PROF. BUTLER, MR. LAIRD.

31. Elements of Botany. Mr. Laird. 206 N.H.

In this course the student is given a succinct account of the form and structure of plants and of how plants grow and feed. For Two-Year Students, First Year. *1 Lec., 2 Lab. per week. 1st S.*

32. Fungous Diseases of Plants. Mr. Laird. 206 N.H.

The principal fungous diseases, their cure and prevention. For Two-Year Students, First Year. *1 Lec., 1 Lab. per week. 2d S.*

CHEMISTRY.

PROF. JAMES, MR. ———.

32. Elementary Applications. Mr. ———. 204 C.H.

An elementary study, with special reference to the elements of plant food, composition of fertilizers, elements subject to exhaustion in soils, etc. For Two-Year Students, First Year. *2 Rec. per week. 2d S.*

DAIRY HUSBANDRY.

PROF. FULLER, MR. DEPEW, MR. ———.

31. Farm Dairying. Mr. DePew. D.B.

Similar to Dairy Husbandry 52. For Two-Year Students, First Year. *2 Lec., 1 Lab. per week. 1st S.*

32. Market Milk. Mr. DePew. D.B.

Similar to Dairy Husbandry 54. Elective for Two-Year Students. Second Year. *2 Lec., 1 Lab. per week.*

33. Buttermaking. Prof. Fuller. D.B.

Similar to Dairy Husbandry 53. Elective for Two-Year Students, Second Year. *2 Lec., 1 Lab. per week. 1st S.*

34. Ice Cream and Cheesemaking. Mr. DePew. D.B.

Similar to Dairy Husbandry 58. Elective for Two-Year Students, Second Year. *2 Lec., 1 Lab. per week. 2d S.*

35. Milk Production. Prof. Fuller. D.B.

Similar to Dairy Husbandry 68. Elective for Two-Year Students, Second Year. *2 Lec., 1 Lab. per week.*

DRAWING.

PROF. HUDDLESTON, MR. LATON.

31. Agricultural Drawing. Prof. Huddleston. 2–39 D.H.

A brief study in the use of drafting instruments, followed by the drawing in plan of a model farmstead with special study given to the arrangement of buildings individually and collectively. For Two-Year Students, Second Year. *1 Drawing period per week. 1st S.*

ECONOMICS.

ASST. PROF. MCKAY.

32. Introduction to Agricultural Economics.
Asst. Prof. McKay. 201 Lib.

This course is designed to give the student the essentials of agricultural economics. Some attention will be given to the principles which determine the value of commodities, of land, of labor, and of capital. Money and banking institutions, with particular reference to the agricultural industry, will also be discussed. For Two-Year Students, Second Year.
1 Lec., 2 Rec. per week. 2d S.

ENGLISH.

PROF. RICHARDS, MRS. PETTEE.

31. Grammar and Elementary Composition. Mrs. Pettee. 205 T.H.

For Two-Year Students, First Year. *3 Rec. per week. 1st S.*

32. Grammar and Composition. Mrs. Pettee. 205 T.H.

For Two-Year Students, First Year.
Prerequisite—English 31. *3 Rec. per week. 2d S.*

ENTOMOLOGY.

PROF. O'KANE, MR. CLEVELAND.

32. Principles of Economic Entomology.
Prof. O'Kane, Mr. Cleveland. 213 T.H.

The relation of the structure and classification of insects to methods of insect control. The preparation and application of insecticides. Spray machinery and appliances. For Two-Year Students, First Year.
2 Rec., 1 Lab. per week. 2d S.

FORESTRY.

PROF. WOODWARD, MR. ———.

32. Farm Forestry. Prof. Woodward, Mr. ———. 202 M.H.

A study of the general principles of forestry with particular reference to the care and management of woodlots; the various methods of cutting and marketing; log scaling; estimating standing timber; protection of forests; seeding and planting; reproducing forests. For Two-Year Students, First Year. *1 Rec., 1 Lab. per week. 2d S.*

HORTICULTURE.

PROF. GOURLEY, ASSOC. PROF. WOLFF, ASST. PROF. HEPLER.

31. Vegetable Gardening. Asst. Prof. Hepler. 202 M.H.

A study of the commercial methods of vegetable growing. Special attention is given to the home garden. Elective for Two-Year Students, Second Year. *1 Lec., 1 Rec., 1 Lab. per week. 1st S.*

32. Home Decoration. Asst. Prof. Hepler. 202 M.H.

A study of ornamental trees, shrubs and flowers; their culture, proper arrangement and decorative value, with special reference to the home surroundings. Elective for Two-Year Students, Second Year.
1 Lec., 1 Rec., 1 Lab. per week. 2d S.

33. Fruit Growing. Assoc. Prof. Wolff. 202 M.H.

This subject embraces a study of commercial orcharding; each fruit is studied with reference to planting, cultivating, pruning, fertilizing picking, packing, storing and marketing. For Two-Year Students First Year. *1 Lec., 1 Rec., 1 Lab. per week. 1st S*

34. Orchard Problems. Prof. Gourley. 202 M.H

Dealing with the principal problems of farm orchards and commercia orchard management. This subject is designed to show the applicatior of the principles of fruit growing to practical conditions. Elective fo Two-Year Students, Second Year. *2 Lec. per week. 2d S*

35. Greenhouse Management. Asst. Prof. Hepler. 202 M.H

Combined lecture, demonstration and laboratory work in greenhous management. Elective for Two-Year Students, Second Year.
1 Lec., 1 Rec., 1 Lab. per week. 1st S

MATHEMATICS.

PROF. TAYLOR, MR. YOUNG.

31. Practical Arithmetic. Mr. Young. 301 M.H

A review of arithmetic with particular reference to decimal fractions mensuration, and percentage, showing the application of these principle

to the solution of practical farm problems. For Two-Year Students, First Year. *2 Rec. per week. 1st S.*

MILITARY ART.

CAPT. KERNAN.

Unless excused by proper authority, all male students are required to complete two years' satisfactory work in military art.

Military Art, 31, 32, 33, 34. Capt. Kernan. 105 Armory.

Same as Military Art 1, 2, 3, 4, page 114.

PHYSICS.

PROF. SUYDAM, MR. MORAN.

31. Elementary Physics. Mr. Moran. 1-35, 1-37 D.H.

Practical applications of important physical principles in mechanics and heat, including a study of steam and gas engines. For Two-Year Agricultural Students, Second Year. *2 Rec., 1 Lab. per week. 1st S.*

NOTE.—A deposit of $1.00 is required at the beginning of the semester for notes and breakage; balance returned at end of year.

POULTRY.

PROF. RICHARDSON.

39. Poultry. Prof. Richardson. 202 M.H.

Covers the subjects of poultry house construction, types and breeds of poultry, feeding, killing and dressing, caponizing, and equipment. Elective for Two-Year Students. *2 Rec., 1 Lab. per week. 1st S.*

40. Poultry. Prof. Richardson. 202 M.H.

Covers the subjects of incubation, brooding, care of young stock, market poultry, poultry diseases, and poultry farm problems. Elective for Two-Year Students. *2 Rec., 1 Lab. per week. 2d S.*

SHOP WORK.

PROF. PORTER, MR. BATCHELDER, MR. MCBRIDE.

32. Wood Work. Mr. Batchelder. Second Floor of Shop.

Exercises in carpenter work, joinery and framing. Bench exercises adapted to farm uses. For Two-Year Students, First Year. Fee, $1.00. *1 Lab. per week. 2d S.*

34. Forging. Mr. McBride. First Floor of Shop.

This is a study in the forging of iron and steel and is designed to teach the operation of drawing, upsetting, welding, twisting, splitting,

and punching. A study is made of the construction, care and management of the forge and instruction given in tempering, case hardening and annealing. For Two-Year Students, Second Year. Fee, $1.00.

1 Lab. per week. 2d S.

SOCIOLOGY.

PROF. GROVES, PROF. SIMMERS.

31. Elementary Social Science: Sociology and Rural Education.
Prof. Groves, Prof. Simmers. 201 Lib.

An elementary study of the social conditions, forces, and institutions of the rural and small communities, especially in the New England states. The purpose of this course is the development of a social basis for leadership and the fulfillment of the obligations of an educated citizenship in the country and village communities. The second part of the semester will be given up to a study of the problems of rural education and will be conducted by the head of the department of education. For Two-Year Students, Second Year. *3 Rec. per week. 1st S.*

ZOÖLOGY.

PROF. JACKSON, MR. BEAN.

31. Physiology and Anatomy. Mr. Bean. 212 T.H.

The work of this subject is evenly divided between the related sciences of anatomy and physiology. It is primarily lectures, but the classroom work is facilitated by the constant use of anatomical charts and models. The most important physiological principles are studied with especial reference to hygiene. *3 Rec. per week. 1st S.*

NEW HAMPSHIRE AGRICULTURAL EXPERIMENT STATION.

Most of the agricultural experiment stations of the country, including the New Hampshire station, were founded in 1888 by an act of congress, approved March 2, 1887, known as the Hatch Act, in honor of its author. This act appropriated fifteen thousand dollars ($15,000) annually for the maintenance of an agricultural experiment station in each state. This act provides:

"That it shall be the object and duty of said experiment stations to conduct original researches or verify experiments on the physiology of plants and animals; the diseases to which they are severally subject with the remedies for the same; the chemical composition of useful plants at their different stages of growth; the comparative advantages of rotative cropping as pursued under a varying series of crops; the capacity of new plants or trees for acclimation; the analysis of soils and water; the chemical composition of manures, natural and artificial, with experiments designed to test their comparative effects on crops of different kinds; the adaptation and value of grasses and forage plants; the composition and digestibility of the different kinds of food for domestic animals; the scientific and economic questions involved in the production of butter and cheese; and such other researches or experiments bearing directly on the agricultural industry of the United States as may in each case be deemed advisable, having due regard to the varying conditions and needs of the respective states and territories." The act also provides that the results of such work shall be published in bulletins and reports.

A further endowment of the experiment stations with Federal funds to provide specifically for research work was made by the Adams Act, passed by congress and approved March 16, 1906. The appropriation received under the

provision of the Adams law now amounts to $15,000 each year. This appropriation is specifically limited to the "necessary expenses of conducting original researches or experiments," and the rulings of the United States Department of Agriculture, which is vested with the supervision of the expenditures under this act, require that this appropriation be spent in fundamental investigations or researches to determine the underlying causes and principles of agricultural science, rather than for mere experiments to secure results of immediate practical application as contemplated under the Hatch Act appropriation. The purposes of the two acts are, therefore, supplementary but distinct.

The New Hampshire Agricultural Experiment Station is organized as a department of the New Hampshire College of Agriculture and the Mechanic Arts, and is administered by a board of control, elected by its board of trustees.

The publications of the station comprise 186 bulletins of the regular series and 19 circulars, 13 technical bulletins, 11 scientific contributions, and 4 school bulletins. The bulletins are issued at irregular intervals and are sent to all residents of New Hampshire requesting them. The station has a mailing list of 17,000 addresses. Back numbers will be sent as long as the supply lasts. Lists of available publications will be sent upon requests.

The above quotations taken from the Hatch and Adams acts are sufficient to indicate the true function of this and other experiment stations called into being by the passage of those laws. At first the experiment stations found it difficult to resist the popular demand made upon them to enter the extension field, to the neglect of research, but it is to the credit of the officials having the directing and executing of those laws in charge that our stations have proved true to their trust. If the stations had not devoted their energies to the fields of original research our agriculture could not possibly be upon the high plane which it occupies to-day.

The introduction of the extension service as a recognized

part of the work of this and other similar institutions only serves to emphasize the importance of experiment station work. In our haste to produce immediate results we sometimes lose sight of the value of the work of our experiment stations. We do not realize the debt agriculture owes to the scientists who are willing to devote their life work to the study of one subject, or at least a very few subjects, without thought to personal ambition and advancement, but purely seeking after truth and the advancement of science.

EXTENSION SERVICE.

The last few years have witnessed a remarkable growth in the development of improved methods of teaching agriculture. There has been a decided change in the attitude of the public toward the work of institutions offering training in agriculture which has made possible and is responsible to a large extent for the unprecedented progress which has been made by state institutions where agriculture is being taught.

The extension service is intended to serve as a medium by which to take the teaching of the college classroom and the results derived from the experiment station fields and laboratories directly to the homes and to the fields of the farmers of the state. It is very difficult to place any just estimate upon the value of such service to a state or to the nation. It is recognized today as never before that upon the prosperity of the farmer depends quite largely the general prosperity of all classes of people. The present high cost of living has done much to attract the attention of people to the relation which the farmer and his interests bear to them personally.

What the colleges and universities are to those young men and young women who come within their walls, the extension service is, only to a lesser degree, to the thousands who are beyond the reach of the classroom. In this state, for example, we do not have over seven hundred students

enrolled at New Hampshire College, while there is a rural population in the state of nearly two hundred thousand, many of whom it is possible to reach in some tangible and helpful way through the extension service.

COOPERATIVE AGRICULTURAL EXTENSION WORK IN AGRICULTURE AND HOME ECONOMICS.

Under the provisions of an act of Congress approved May 8, 1914, New Hampshire, the same as every other state, receives the sum of $10,000 annually from the federal government for supplementing and strengthening the extension work of the Agricultural College.

In addition to the annual appropriation of $10,000, each state is to share in increased allotments for seven years in the proportion which the rural population of each state bears to the total rural population of all the states as determined by the next preceding federal census provided the state shall appropriate an equal sum. If New Hampshire fulfills her part in carrying out the provisions of the Smith-Lever law, the state will receive in 1922–23 and thereafter, from the federal government, annually the sum of $24,572, for conducting coöperative demonstration work in agriculture and home economics.

This financial assistance from the federal government comes to New Hampshire at a time when state and other funds are inadequate for meeting the demands which are constantly being made upon the college, and will make it possible for the extension service to strengthen and develop its work along all lines and render a still greater service to the state.

The organization of a distinct department or division of extension service in connection with our state colleges and universities gives proper recognition to the threefold function; viz., teaching resident students, conducting investigations, and carrying information and assistance from the college and station into all parts of the state.

The extension service with its own corps of men relieve the college teaching staff and station workers from much of the miscellaneous extension work which they, of necessity, have been compelled to carry on in the past.

This new organization permits the selection and assigning of such duties to the individual as he seems best fitted to perform, which will work for efficiency in all three departments or divisions. We have the Smith-Lever law to thank for hastening the time of bringing these things to pass.

The United States Department of Agriculture has created what is known as the States Relations Service to take charge of and coöperate with the several states in carrying out the provisions of the Smith-Lever law. Having the extension work of each state closely associated with the work of the United States Department of Agriculture through the States Relations Service is a very potent factor in unifying and strengthening the extension work throughout the United States.

DEGREES AND HONORS, 1917.

MASTER OF SCIENCE.

Albert William Gamash, B.S., 1915 ..... Manchester
Arnold Jay Grant, B.S., 1915 ..... North Berwick, Me.
Todd Orin Smith, A.B. ..... Carrollton, Ohio

BACHELOR OF SCIENCE.

Agricultural Division.

James Daniel Colomy ..... Durham
Charles Cummings ..... Colebrook
Frank Williams Fitch ..... Windsor, Vt.
Philip Alden Hayden ..... Brookline
Willis Hadley Hoyt ..... Newington
Harvey Foss Jenkins ..... Manchester
Ellsworth Sheldon Johnson ..... Springfield, Vt.
Leroy Moses Lake ..... Brentwood
Harold Benjamin Little ..... Colebrook
Edward Long ..... Dover
Earl Brazil Nichols ..... Newton
Leonard Russell Nixon ..... Exeter
Clark Leavitt Stevens ..... Colebrook
William Hervey Thomas ..... Durham
Sidney Warren Wentworth ..... Hollis
Kyle Chester Westover ..... Manchester

Arts and Science Division.

Vance Whiting Batchelor ..... Durham
Louise Elizabeth Burpee ..... Manchester
Rachael Clarenda Colby ..... New Boston
Leon Weston Cooley ..... Dana, Mass.
Clifton Henry Dustin ..... Rochester
Alice Fernald ..... Dover
Isabel Jane Fernald ..... Dover
Ralph Harold Gillmore ..... Concord
Roy Charles Lemach Graham ..... Epping
Philip Joseph Griffin ..... Portsmouth
Verna Carola Hardy ..... Concord
Mary Anthony Langley ..... Durham
Carl Weston Lombard ..... Newburyport, Mass.
Eugene Hodgdon Lord ..... Hopkinton
Henrietta Carlton Nudd ..... Hampton

Beatrice Reed.....Claremont
Julia Aurelia Roberts.....Toledo, Ohio
Nathaniel Edwin Robinson.....Concord
Herbert Ambrose Scruton.....Dover
Clarice Henrietta Shannon.....Laconia
Alberta Neal Steuerwald.....Dover
Abby Jewett Turcotte.....Lakeport
Helen Brown Weston.....Lisbon
Edwin Albert Wiggin.....Exeter
Mary Abbie Worcester.....Berwick, Me.

Engineering Division.

Clyde Warren Archibald.....Portsmouth
Frank Powers Bennett.....Northwood
Oscar Choate Brown.....Lebanon
Arthur Samuel Burleigh.....Ossipee
Elmer Frank Cutts.....Manchester
Leland Worthen Davis.....Concord
William Allen Dudley.....Colebrook
Joseph Elliott Frisbee.....Portsmouth
Robert Edgar Hodgdon.....Rochester
Rufus Lawrence Nelson.....Tilton
George Downes Parnell.....Manchester
Ray Towle Roberts.....West Concord
John Hooper Rollins.....Dover
Edgar Samuel Ross.....Nashua
Howard Eugene Swain.....Exeter
Carlton Briggs Tibbetts.....Somersworth
Edward Richard Wagner.....Manchester

BACHELOR OF ARTS.

Goldie Basch.....Ashuelot
Ralph Howard Bissell.....Keene
Phyllis Mary Blanchard.....Epping
Charles Chester Bond.....Lisbon
Gladys Alice Brown.....Franklin
Oscar Choate Brown.....Lebanon
Marion Olive Chase.....Seabrook
Leon Meader Crouch.....Durham
Natalie Drew Ewer.....Dover
Beatrice Louise Fall.....Dover
Nathaniel Joy Harriman.....Laconia
Frances Dorotha Hatch.....Exeter
Ruth Janet Hussey.....Rochester
Myrtle May Johnson.....Reed's Ferry

Eleanor Hurst Lambert.....Kittery Point, Me.
Harlan Ray Meserve.....Rochester
Ralph Harthan Parker.....Kingston
Leonard Parker Philbrick.....North Hampton
Hansel Arthur Russell.....Lebanon
Joseph Abraham Sussman.....Portsmouth
Helen Florence Tilton.....Auburn
Fred Webster Weston.....Lisbon
Arthur Benjamin Whittemore.....Colebrook
Rohl Chase Wiggin.....Concord

TWO-YEAR CERTIFICATES IN AGRICULTURE.

Roland Webster Abbott.....Hudson
Roger Morrill Ames.....Lakeport
Eben Woodman Cate.....Laconia
Dustin Charles Cofran.....Manchester
John Edward Colcord.....Derry
Peter James Doyle.....Hampton Falls
James Eastman.....West Canaan
Joseph Harvey Ellis.....West Somerville, Mass.
Arthur Lester Foss.....Tilton
Leo Copp French.....Tilton
Henry Earl Gilson.....Windham
Holman Arcsel Holbrook.....Colebrook
Horace Batava Laugher.....Worcester, Mass.
George Wesley Leonard.....Piermont
Henry Hubert Merrill.....Littleton
Roger Moulton Merrill.....Hampton Falls
George Cavis Minot.....Bath
Albert Peterson.....Raymond
Constentin Petmezas.....Portsmouth
Waldo Ries.....New York, N. Y.
Ward Barton Rounds.....West Milan
Morrill Joseph Sanborn.....Rochester
Dwight George Smith.....Nashua
John Charles Williams.....Peterborough

TWO-YEAR CERTIFICATES IN ENGINEERING.

Armand Alfred Brien.....Manchester
Lelle Francis Dearborn.....Epping
Robert Harrison Hardy.....Somerville, Mass.
Robert Johnson.....Manchester
Herman Elroy Pettigrew.....Portsmouth
Francis Taylor Potter.....Mountainview
Leon Lester Roberts.....Portsmouth

HONOR LIST FOR 1917.

SPECIAL HONOR.

Average of 90 or more for the year's work.

1917.

Phyllis Mary Blanchard.
Marion Olive Chase.
Charles Cummings.
Alice Fernald.
Frances Dorotha Hatch.

1918.

Martha Luena Hoitt.

1919.

Mary Robinson Cressey.
Dorothy Hanson.
Frank Adin Joy.

1920.

John Bloomfield.
Philip Brierley.
Esther Lucile Brown.
Chester Allen Scammon.

HONOR.

Average of 85 or more for the year's work.

1917.

Goldie Basch.
Gladys Alice Brown.
Elmer Frank Cutts.
Natalie Drew Ewer.
Beatrice Louise Fall.
Isabel Jane Fernald.
Verna Carola Hardy.
Eleanor Hurst Lambert.
Beatrice Reed.
Julia Aurelia Roberts.
Alberta Neal Steuerwald.
Clark Leavitt Stevens.
William Hervey Thomas.

1918.

Eva Emma Eastman.
Heman Charles Fogg.
Edith Emily Foss.
Alfred Newman Graham.
Irene Meyers Huse.
Weston Harvey Jeffers.
Raymond Soule Morrill.
Elmer Nason Sanders.
Rollins Wentworth.

1919.

Dorothy Adeline Hale.
Louis Benjamin Hoffman.
Mary Ethel Kelleher.
Alice Bowdoin Kemp.
Madeline Lona Pinkham.
Louise Mary Richmond.
Miriam Augusta Sanders.
Karl Leland Wildes.

1920.

Helen Miller Barton.
Margaret Sullivan Cote.
Frederic Hanscom Emery.
Arthur Eugene Harris.
Ethelle Meserve Hayes.
Ellen Grace Holden.
Judith Varney Jenness.
Grace Mae Joy.
Florence Aura Kelley.
Chester Linwood Lane.
Hazel Belle Moore.
Marjorie May Saxton.
Jennie Mae Shannon.
Grace Ireland Wallace.

HONOR.

Two Year.

1917.

George Cavis Minot.

Special.

Marjory Ramsdell Boomer.

PRIZE RECORD FOR 1917.

BAILEY PRIZE.

GIVEN BY DR. C. H. BAILEY, CLASS OF '79 AND E. A. BAILEY, CLASS OF '85.

CARLETON BRIGGS TIBBETTS, Somersworth.

ERSKINE MASON MEMORIAL PRIZE.

LEON WESTON COOLEY, Dana, Mass.

CHASE-DAVIS MEMORIAL MEDALS.

Gold Medal.

RALPH HOWARD BISSELL, Keene.

Silver Medal.

KYLE CHESTER WESTOVER, Manchester.

LILIAN S. EDWARDS PRIZE.

DOROTHY HANSON, Franklin.

CHI OMEGA PRIZE.

CLARICE HENRIETTA SHANNON, Laconia.

VALENTINE SMITH SCHOLARSHIPS.

MARTHA LUENA HOITT, '18, Durham.
GLADYS HOAGLAND, '18, Durham.
JOHN BLOOMFIELD, '20, Dover.
HARRIET MAY FORD, '21, South Danbury.

ROSTER OF COMMISSIONED OFFICERS.

BATTALION OF RESERVE OFFICERS' TRAINING CORPS.

1917–1918.

Commandant, CAPT. RANDAL KERNAN, U. S. A. Retired.

FIELD AND STAFF.

Major E. N. SANDERS, *Commanding Battalion.*
First Lieutenant CLEMENT A. WAKEFIELD, *Adjutant and Acting Supply Officer.*
Supply officer, vacancy.

COMPANY A.

Captain R. H. SAWYER, *Commanding Company.*
First Lieutenant O. R. PAGE, *duty with Company.*
Second Lieutenant, vacancy.

COMPANY B.

Captain P. B. PLACE, *Commanding Company.*
First Lieutenant W. E. SHUTTLEWORTH, *duty with Company.*
Second Lieutenant, vacancy.

COMPANY C.

Captain A. M. SPENCER, *Commanding Company.*
First Lieutenant A. B. WHITE, *duty with Company.*

STUDENTS, 1916–1917.

Following each student's name is the number of hours toward graduation credited to him on the records in the Registrar's Office. The "course" shows the department in which the student registered for the second semester of this year.

The abbreviations indicating the course stand for the following:

a. h. and *d.*—Animal Husbandry and Dairy; *for.*—Forestry; *hort.*—Horticulture; *gen. a.*—General Agriculture; *a.*—Freshmen and Sophomores in Agriculture; *ch. e.*—Chemical Engineering; *m. e.*—Mechanical Engineering; *e. e.*—Electrical Engineering; *a.* and *s.*—General Arts and Science; *h. e.*—Home Economics; *m. a. t.*—Mechanic Arts.

SENIORS.

Name.	Hours' Credit.	Course.	P. O. Address.
Adams, Eloi Augustus,	116½	*a. h.* and *d.*	*Durham.*
Baker, John Arthur,	129	*ch. e.*	*Claremont.*
Bartlett, Richard Cilley,	132	*e. e.*	*Derry Village.*
Benson, Maurice Haynes,	127	*a. h.* and *d.*	*Lebanon.*
Blatchford, George Nason,	120	*a.* and *s.*	*Hampton Falls.*
Brackett, Ralph deRochemont,	131	*hort.*	*Greenland.*
Bragdon, Doris Lillian,	113	*h. e.*	*Exeter.*
Broderick, Charles Bernard,	131	*a. h.* and *d.*	*Exeter.*
Bugbee, Helen Marion,	112	*a.* and *s.*	*Claremont.*
Cahalane, Reginald Foster,	117	*a.* and *s.*	*Walpole.*
Clark, Malcolm Barrett,	116	*a.* and *s.*	*Bethlehem.*
Coburn, Charles Higgins,	130	*hort.*	*Tyngsboro, Mass.*
Coburn, Rodney Clyde,	132	*ch. e.*	*Lowell, Mass.*
Cushing, Mary Olive,	123	*h. e.*	*Concord.*
Dalton, Stanley Hatch,	127	*gen. a.*	*Nashua.*
Dodge, James William,	129	*e. e.*	*Contoocook.*
Dreller, Louis,	130	*e. e.*	*Portsmouth.*
Durgin, Charles Butterworth,	131	*ch. e.*	*Wilton.*
Eastman, Eva Emma,	123	*a.* and *s.*	*Concord.*
Flynn, Mildred Margaretta,	120	*a.* and *s.*	*Dover.*
Fogg, Heman Charles,	131	*ch. e.*	*Concord.*
Foss, Edith Emily,	123	*a.* and *s.*	*Dover.*
Furber, Josephine Marguerite,	122	*h. e.*	*Laconia.*
Garland, Otis Raymond,	132	*gen. a.*	*Hampton.*
George, Maurice Channing,	130	*m. e.*	*Danville.*
Gilson, Marion Susan,	113	*a.* and *s.*	*Windham.*

Name.	Hours' Credit.	Course.	P. O. Address.
ove, Lucile Adeline,	108	*a.* and *s.*	*North Danville.*
aham, Alfred N.,	112	*a.* and *s.*	*Henniker.*
adley, Ruth Whitney,	118	*h. e.*	*Durham.*
all, Fred William,	120	*a. h.* and *d.*	*Center Strafford.*
ardy, Ernest Winfield,	118	*gen. a.*	*Contoocook.*
arris, Florence Julia,	117	*h. e.*	*Laconia.*
ewey, Hilbert Goodrich, Jr.,	116	*a.* and *s.*	*Lewiston, Me.*
oagland, Gladys,	109	*a.* and *s.*	*Concord Jct., Mass.*
ofstead, Joel William,	134	*a.* and *s.*	*Winchendon, Mass.*
oitt, Martha Luena,	123	*h. e.*	*Durham.*
owe, Fred John,	109	*a.* and *s.*	*Exeter.*
umiston, John Edwin,	129	*a. h.* and *d.*	*Hanover Center.*
use, Irene Meyers,	120	*a.* and *s.*	*Laconia.*
utchinson, Raymond Welch,	131	*gen. a.*	*Reed's Ferry.*
gerson, Della May,	121	*h. e.*	*Starrking.*
vine, Howard Thompson,	132	*a. h.* and *d.*	*Exeter.*
ffers, Weston Harvey,	134	*a. h.* and *d.*	*Pike.*
nkins, Rodney Solon,	134	*a. h.* and *d.*	*Barnstead.*
nes, Russell Cyprian,	119	*a.* and *s.*	*Exeter.*
ng, Elsie Louise,	126	*h. e.*	*Dover.*
ne, Merton Burgess,	129	*ch. e.*	*Ashburnham, Mass.*
ry, Erma Mosso,	119	*a.* and *s.*	*Berlin.*
errill, Lester Edwin,	120	*hort.*	*Lebanon.*
errill, Marguerite Mae,	112	*a.* and *s.*	*Nashua.*
iltimore, John Everett,	124	*gen. a.*	*Derry.*
orrill, Raymond Soule,	132	*a.* and *s.*	*Warren.*
evers, Ralph Poor,	116	*a.* and *s.*	*Salem, Mass.*
rsons, John Joseph,	123	*a.* and *s.*	*Somersworth.*
chardson, Clesson Willard,	111	*a.* and *s.*	*Marlborough.*
nders, Elmer Nason,	130	*ch. e.*	*Durham.*
wyer, Robert Hamilton,	134	*a. h.* and *d.*	*Bradford, Mass.*
ott, Susan Helen,	113	*a.* and *s.*	*Durham.*
ovell, Earl Louis,	128½	*for.*	*Haverhill, Mass.*
encer, Archie McQuesten,	128	*m. e.*	*Plymouth.*
mson, Robert Chapman,	130	*ch. e.*	*New London.*
ain, Lewis Churchill,	127½	*for.*	*Exeter.*
adleigh, Clarence Benjamin,	131	*gen. a.*	*Newton.*
alker, Ethel May,	122	*h. e.*	*Concord.*
entworth, Rollins,	131	*e. e.*	*Dover.*
hippen, Norman Francis,	133	*a. h.* and *d.*	*Kingston.*
illand, Howard,	136	*hort.*	*East Wolfeboro.*
inn, Hazel Searles,	119	*a.* and *s.*	*Dover.*
ung, Claiborne Hart,	135	*hort.*	*Wilton.*

JUNIORS.

Name.	Hours' Credit.	Course.	P. O. Address.
Ashford, Olive,	81	*h. e.*	*Antrim.*
Atwood, Grace Etta,	83	*a.* and *s.*	*Worcester, Mass.*
Baker, Margaret Edna,	85	*h. e.*	*Littleton.*
Barker, Forrest Allen,	76	*ch. e.*	*Nashua.*
Bartlett, Edward Emery,	90	*e. e.*	*Derry.*
Belyea, Clement Chipman,	79	*a.* and *s.*	*Newfields.*
Benson, Priscilla,	79	*h. e.*	*Lebanon.*
Bradley, Josephine May,	67	*a.* and *s.*	*Dover.*
Callender, Benjamin Richard,	84	*ch. e.*	*Bethlehem.*
Center, Mary Elizabeth,	87	*h. e.*	*Hudson.*
Chamberlin, Muriel,	83	*a.* and *s.*	*Berlin.*
Clapp, Arthur Everett,	79	*a.* and *s.*	*Portsmouth.*
Cochrane, Thomas Joseph,	81	*ch. e.*	*Ludlow, Mass.*
Cressey, Mary Robinson,	83	*a.* and *s.*	*Dover.*
Cullinan, John Francis,	89	*ch. e.*	*Portsmouth.*
Davis, Otto Winfred,	95	*a. h.* and *d.*	*Concord.*
Dimond, Blanche Farnum,	86	*h. e.*	*West Concord.*
Doherty, Mildred Eva,	82	*h. e.*	*Derry.*
Dustin, Cecil Calvert,	96	*a. h.* and *d.*	*Rochester.*
Edwards, Laurene Mary,	77	*a.* and *s.*	*Franklin.*
Emery, Henry Alfred,	84	*e. e.*	*Auburn.*
Emery, Ralph Benton,	86½	*hort.*	*Springvale, Me.*
Ewart, Raymond James,	81	*gen. a.*	*Lawrence, Mass.*
Fenderson, Kendrick Elwell,	73	*a.* and *s.*	*Dover.*
Garland, Oscar Leavitt,	82	*a.* and *s.*	*Hampton.*
Glidden, Norman Frank,	90	*gen. a.*	*Alton Bay.*
Greenfield, Sara Ella,	83	*a.* and *s.*	*Rochester.*
Hale, Dorothy Adaline,	86	*a.* and *s.*	*Dover.*
Hall, Irene Marguerite,	72	*a.* and *s.*	*Rochester.*
Hanson, Dorothy,	82	*a.* and *s.*	*Franklin.*
Harvell, Ralph Burbank,	73	*hort.*	*Laconia.*
Hilliard, William Russell,	88	*a. h.* and *d.*	*East Kingston.*
Hoffman, Louis Benjamin,	90	*e. e.*	*Manchester.*
Hunt, Cyril Thomas,	87	*ch. e.*	*Cornish Flat.*
Joy, Frank Adin,	93	*m. e.*	*Newfields.*
Kelleher, Mary Ethel,	81	*a.* and *s.*	*Dover.*
Kemp, Alice Bowdoin,	86	*h. e.*	*Kingston.*
Langley, Ada Carolyn,	84	*a.* and *s.*	*Durham.*
Lewis, Marion Anna,	85	*h. e.*	*Littleton.*
McCarty, Mary Elizabeth Anna,	85	*a.* and *s.*	*Dover.*
Matthes, Carl Frederick,	88	*ch. e.*	*Lawrence, Mass.*
Moody, Alden Howard,	83	*ch. e.*	*Concord.*

Name.	Hours' Credit.	Course.	P. O. Address.
ghtingale, Gordon Thayer,	92	*gen. a.*	*Moosup, Conn.*
dd, Willard Eugene,	93	*m. e.*	*Hampton.*
en, Wilfrid Lester,	79	*ch. e.*	*Colebrook.*
ge, Oral Allen,	95	*a. h.* and *d.*	*Newton.*
kins, Caroline May,	84	*a.* and *s.*	*Claremont.*
kham, Madelene Lona,	89	*h. e.*	*Dover.*
ce, Palmer Bruce,	86	*ch. e.*	*Newmarket.*
and, Mary Flora,	82	*a.* and *s.*	*Lebanon.*
scott, Frank,	85	*a.* and *s.*	*Pittsfield.*
ndall, Christine Flora,	84	*a.* and *s.*	*Campton.*
hmond, Louise Mary,	86	*a.* and *s.*	*Dover.*
bb, Bernice Aurilla,	89	*h. e.*	*Durham.*
mrill, Hamilton,	92	*m. a. t.*	*Hillsborough.*
nders, Miriam Augusta,	88	*h. e.*	*Rochester.*
wards, Susie Ethel,	88	*h. e.*	*Dover.*
dd, Hazelle Maude,	86	*h. e.*	*Rochester.*
llaber, John James,	84	*m. e.*	*Portsmouth.*
uttleworth, Melba Johnson,	89	*a.* and *s.*	*West Springfield.*
uttleworth, William Edward,	89	*a. h.* and *d.*	*Portsmouth.*
ith, Gertrude May,	87	*h. e.*	*Newfields.*
ith, Mabel Foster,	85	*h. e.*	*Claremont.*
fford, John Fremont,	91	*a.* and *s.*	*Berlin.*
ain, Murray Hartshorn,	83	*a.* and *s.*	*Groveton.*
therland, Christine Jane,	88	*h. e.*	*Plymouth.*
ompson, William Haven,	81	*ch. e.*	*Atkinson.*
ton, Lewis Blake,	93	*a. h.* and *d.*	*East Kingston.*
rrey, Prescott Hawes,	76	*hort.*	*Durham.*
kefield, Clement Arthur,	75	*a.* and *s.*	*Biddeford, Me.*
etherbee, Emma Louise,	83	*h. e.*	*Milford.*
eeler, William Crawford,	97	*for.*	*Starrking.*
ite, Alpheus Britton,	86	*a.* and *s.*	*Peterborough.*
ggin, Ida Marion,	79	*h. e.*	*Dover.*
lds, Karl Leland,	82	*e. e.*	*Belmont.*
lliams, Katharine,	88	*h. e.*	*Exeter.*
ung, Roland Jesse,	78	*a.* and *s.*	*Berlin.*

SOPHOMORES.

bott, Howard Stanley,	52	*a.*	*Wilton.*
ams, Helen Gertrude,	66	*h. e.*	*Farmington.*
erman, Wallace Sheldon,	50	*e. e.*	*Portsmouth.*
drich, Katherine Spurlin,	50	*a.* and *s.*	*Whitefield.*
iley, George Rex,	42	*m. a. t.*	*West Newbury, Mass.*

Name.	Hours' Credit.	Course.	P. O. Address.
Bailey, Mary Elizabeth,	53	*a.* and *s.*	*Durham.*
Banister, Rolfe George,	52	*a.*	*Colebrook.*
Barton, Helen Miller,	52	*h. e.*	*Seabrook.*
Bickford, Gladys Charlotte,	52	*h. e.*	*Gonic.*
Billingham, George Harold,	48	*m. a. t.*	*Boston.*
Binks, Doris Reba,	48	*a.* and *s.*	*Franklin.*
Blood, Kenneth Darwin,	41	*a.*	*Claremont.*
Bloomfield, John,	52	*ch. e.*	*Dover.*
Boutwell, Harley,	48	*a.* and *s.*	*Concord.*
Brierley, Philip,	48	*a.* and *s.*	*Stratham.*
Brooks, Beatrice Azelia,	46	*a.* and *s.*	*Dover.*
Brooks, Frank Arthur,	55	*m. e.*	*Manchester.*
Brown, Arthur Butler,	52	*a.*	*Fremont.*
Brown, Charles Edward,	73	*a.* and *s.*	*Dover.*
Brown, Esther Lucile,	44	*a.* and *s.*	*Newfields.*
Browne, Winnifred Pearle,	52	*a.* and *s.*	*Manchester.*
Bryant, Rachael Leona,	51	*h. e.*	*Portsmouth.*
Burleigh, Lucile Edna,	38	*a.* and *s.*	*Franklin.*
Burpee, Howard Ainsworth,	43	*ch. e.*	*Manchester.*
Butler, Frank Herbert,	32	*a.* and *s.*	*New London.*
Chadwick, Marion Elizabeth,	49	*a.* and *s.*	*Boscawen.*
Chamberlain, Abiel Herbert,	49	*ch. e.*	*South Natick, M*
Champaigne, Francis Michael,	29	*ch. e.*	*Keene.*
Clarke, Daniel Willatowski,	52	*a.*	*Schenectady, N.*
Cole, Paul Cutting,	27	*a.* and *s.*	*Hillsborough Up*
Congdon, Neal Harrison,	43	*a.* and *s.*	*Lancaster.*
Cote, Margaret Sullivan,	47	*a.* and *s.*	*Nashua.*
Cree, Leighton Joseph,	47	*a.*	*Colebrook.*
Cross, Leon Forrest,	49	*a.* and *s.*	*Tilton.*
Cummings, Flora Belle,	52	*h. e.*	*Colebrook.*
Currier, Leslie Charles,	40	*e. e.*	*North Conway.*
Currier, Laurence Otis,	33	*a.* and *s.*	*Portsmouth.*
Davis, Arthur Franklin,	45	*a.* and *s.*	*Portsmouth.*
Dearborn, Hazel Ruth,	53	*a.* and *s.*	*Durham.*
Donahoe, Helen Bernadine,	48	*a.* and *s.*	*Waltham, Mass.*
Edgerly, Eva Hester,	55	*a.* and *s.*	*Newmarket.*
Elkins, Dorice White,	52	*h. e.*	*Hampton Falls.*
Ewer, Everett Donald,	46	*a.* and *s.*	*Dover.*
Felker, Harold Perkins,	44	*a.*	*Lakeport.*
Fitch, Harold Wakefield,	47	*a.* and *s.*	*Claremont.*
Fitts, Perley Irving,	50	*a.*	*Etna.*
Flanders, David James,	34	*a.* and *s.*	*Manchester.*
Foster, Russell Chase,	50	*m. e.*	*Arlington, Mass.*

Name.	Hours' Credit.	Course.	P. O. Address.
ox, Gordon Lloyd,	47	*a.* and *s.*	*Lisbon.*
ardner, Celia Hubbard,	52	*h. e.*	*Springfield.*
ardner, Eleanor Rebecca,	30	*a.* and *s.*	*Hillsborough.*
aw, Harold Edmund,	38	*e. e.*	*Manchester.*
olding, Norman Randall,	56	*a.*	*Durham.*
ove, Norris Dickinson,	52	*m. e.*	*Raymond.*
reer, Raymond Chase,	40	*a.* and *s.*	*Grasmere.*
aggerty, William Jennings,	40	*e. e.*	*Nashua.*
am, Harold Rudman,	49	*a.*	*Barrington.*
arling, Harry Jonathan,	52	*a.*	*Jaffrey.*
Iarris, Arthur Eugene,	35	*ch. e.*	*Concord.*
ayes, Ethelle Meserve,	52	*h. e.*	*Dover.*
erlihy, Abby Katherine,	43	*a.* and *s.*	*Derry Village.*
icks, Albert Ernest,	32	*e. e.*	*Dover.*
ill, Benjamin Franklin,	31	*ch. e.*	*Somersworth.*
ill, William Rodney,	44	*a.*	*Concord.*
unt, Esther Hazel,	40	*h. e.*	*Kennydale, Wash.*
use, Walter Daniel,	41	*m. e.*	*Laconia.*
nness, Judith Varney,	46	*a.* and *s.*	*Dover.*
nness, Leslie George,	52	*ch. e.*	*South Danbury.*
nes, Elizabeth,	59	*a.* and *s.*	*Union.*
nes, Lucie Jeannette,	51	*a.* and *s.*	*Milton.*
y, Grace Mae,	50	*a.* and *s.*	*Newmarket.*
nkins, Frank Leroy,	28	*a.*	*Exeter.*
elley, Florence Aura,	49	*a.* and *s.*	*Plaistow.*
ing, Frances,	47	*a.* and *s.*	*Concord.*
ight, Robert Earl,	72	*a.*	*Westmoreland Depot.*
ne, Chester Linward,	52	*ch. e.*	*Concord.*
Montagne, Ovide Romeo,	40	*m. e.*	*Rochester.*
ngley, Mildred Mae,	52	*a.* and *s.*	*Durham Point.*
wis, Miriam,	43	*a.* and *s.*	*Chester.*
tch, Richard Corning,	46	*e. e.*	*Exeter.*
ugee, Arlo Roy,	49	*m. e.*	*Laconia.*
cGinn, John Thomas,	40	*a.*	*Rochester.*
cQuesten, Ruth Carolyn,	52	*h. e.*	*Manchester.*
artins, Abilio Pinto,	30	*a.* and *s.*	*Rio de Janeiro, Brazil.*
elville, George Donald,	52	*a.* and *s.*	*Hyde Park, Mass.*
eserve, Jessica Frances,	52	*h. e.*	*Dover.*
itchell, Basil Joseph,	36	*e. e.*	*Nashua.*
orrill, Clyde Rex,	48	*a.* and *s.*	*Dover.*
orrison, Cecil Allister,	46	*a.* and *s.*	*Rochester.*
urphy, Helen Ann,	52	*ch. e.*	*Concord.*

Deceased.

Name.	Hours' Credit.	Course.	P. O. Address.
Nelson, Daniel Horace,	46	*a.*	*Franconia.*
Newman, Derwood Austin,	41	*ch. e.*	*Lancaster.*
Norris, Edith Priscilla,	55	*h. e.*	*East Derry.*
O'Leary, Christopher James, Jr.,	49	*a.* and *s.*	*Newfields.*
Otis, Rena Frances,	43	*a.* and *s.*	*Rochester.*
Paterson, Frank Edward,	44	*a.* and *s.*	*Portsmouth.*
Patten, Gordon Willis,	44	*a.* and *s.*	*Manchester.*
Paul, Samuel Henry,	52	*m. e.*	*Wakefield.*
Pelton, Winslow Lyle,	55	*a.* and *s.*	*Lancaster.*
Perkins, Charles Gladstone,	50	*e. e.*	*Portsmouth.*
Petmezas, Constentine,	61½	*a.* and *s.*	*Portsmouth.*
Pichette, Edward Albert,	49	*ch. e.*	*Concord.*
Pierce, Walter Raymond,	38	*a.* and *s.*	*Springfield, Mass.*
Pike, Otis William,	52	*m. e.*	*Antrim.*
Pingree, George Nathan,	52	*e. e.*	*New London*
Pitman, Ralph Read,	52	*a.* and *s.*	*Wakefield.*
Plaisted, Guy Edgar,	52	*e. e.*	*Portsmouth.*
Reed, John Ephraim,	41	*a.* and *s.*	*Concord.*
Reid, Walter Davis,	49	*e. e.*	*Berlin.*
Rogers, Walter Eugene,	67	*a.* and *s.*	*Sanbornville.*
Rumford, Clarence Henry,	31	*a.*	*Newfields.*
Saxton, Marjorie May,	53	*h. e.*	*Manchester.*
Scammon, Chester Allen,	56	*e. e.*	*Stratham.*
Sewall, Frank Albert,	54	*a.*	*Newmarket.*
Shannon, Edwin Howe, Jr.,	48	*a.* and *s.*	*Laconia.*
Shannon, Jennie Mae,	52	*a.* and *s.*	*Epping.*
Shum, Raymond Edward,	43	*a.* and *s.*	*Dover.*
Smith, Arthur Deane,	48	*a.*	*Andover.*
Smith, Deborah Beatrice,	47	*h. e.*	*Newfields.*
Smith, Edward Emerson.	52	*a.*	*Mason.*
Spinney, Willard Ellsworth,	47	*ch. e.*	*Concord.*
Sprague, Daniel Laurence,	44	*e. e.*	*Plaistow.*
Steele, James Fiddes,	41	*a.* and *s.*	*Concord.*
Stott, George Phillip,	50	*a.* and *s.*	*Portsmouth.*
Stryker, Phebe Key,	46	*a.* and *s.*	*George's Mills.*
Sughrue, Esther,	44	*a.* and *s.*	*Nashua.*
Thomas, Michael Simon,	34	*e. e.*	*Durham.*
Thompson, Elmer John,	44	*a.*	*Contocook.*
Tokarski, Casimir,	36	*a.*	*Durham.*
Twaddle, Arthur Eastman,	35	*m. e.*	*Manchester.*
Vose, Milton Reynolds,	28	*a.* and *s.*	*Concord.*
Wallace, Grace Ireland,	53	*h. e.*	*Manchester.*
Wasgatt, Hazel Lillian,	37	*a.* and *s.*	*Kittery, Me.*

Name.	Hours' Credit.	Course.	P. O. Address.
atson, Wesley,	58	*e. e.*	*Manchester.*
eigel, Frederick Albert,	58	*e. e.*	*Durham.*
entworth, Russell Gerrish,	46	*e. e.*	*Farmington.*
illiams, Isaac Langley,	37	*a.* and *s.*	*Exeter.*
oung, Ralph Joy,	52	*a.*	*Dover.*

FRESHMEN.

dams, Oscar Fisk,		*a.*	*Charlestown.*
ldrich, Kathryn Margaret,	17	*h. e.*	*Lancaster.*
mes, John Dwight,	8	*m. e.*	*Somersworth.*
nderson, Ernest August Franklin,	14	*a.* and *s.*	*New Milford.*
nthony, Sidney Stewart,	15	*a.*	*Manchester.*
yers, Hazel Marguerite,	17	*h. e.*	*Rochester.*
ailey, Paul Joseph,	11	*ch. e.*	*Portsmouth.*
aker, Albert Samuel,	18	*a.* and *s.*	*Contoocook.*
aker, Grace,		*a.* and *s.*	*Exeter.*
asch, Aaron Mack,	19	*a.* and *s.*	*Ashuelot.*
atchelder, George Harold,	17	*a.* and *s.*	*Hampton.*
atchelder, Harold Silsby,		*a.*	*Hampton.*
eane, Norman Rollins,	17	*a.* and *s.*	*Newington.*
earse, Norman Irving,	18	*ch. e.*	*Nashua.*
eggs, Mary Kathleen,	17	*a.* and *s.*	*Concord.*
ell, Leslie Samuel,	29	*a.* and *s.*	*Plymouth.*
ennett, Robert Goodwin,	19	*a.*	*Newmarket.*
ertrand, Arthur Leon,	16	*a.* and *s.*	*Exeter.*
lood, Paul Tolman,	19	*a.*	*Lisbon.*
oodey, Cecil Webster,	20	*a.* and *s.*	*West Barrington.*
ooth, George Guy,	45	*m. e.*	*Laconia.*
ooth, Gordon Roger,	16	*e. e.*	*Dover.*
ourdon, Irene Cecile,	16	*h. e.*	*Manchester.*
oyd, Mary Anne Catherine,	17	*a.* and *s.*	*Dover.*
rown, Donald Stuart,	18	*ch. e.*	*Laconia.*
rown, Percival Cyrus,	18	*m. e.*	*Woodstock.*
urdett, Louise,	17	*a.* and *s.*	*Leominster, Mass.*
urgess, Richard Nelson,	19	*a.*	*Nashua.*
ushnell, Laverne,	16	*e. e.*	*Hanover.*
utler, Theodore Rutledge,	16	*a* and *s.*	*Portsmouth.*
alef, Leon Chesley,	21	*a.* and *s.*	*East Barrington.*
alpin, Arthur Raymond,	14	*ch. e.*	*Manchester.*
ampbell, Ernest Weston,	19	*a.*	*Gonic.*
arpenter, Richard Frederick,	15	*ch. e.*	*Littleton.*
avis, Sarah Hortense,	17	*ch. e.*	*Bristol.*

Name.	Hours' Credit.	Course.	P. O. Address.
Chaplin, Daniel Reed,	12	*e. e.*	*Keene.*
Chase, Dorothy,	19	*a.* and *s.*	*Smithtown.*
Chase, Fred Levi,	17	*a.* and *s.*	*Wolfeboro Falls.*
Chase, Martha Elizabeth,		*a.* and *s.*	*Contoocook.*
Chickering, Elizabeth Emery,	18	*a.* and *s.*	*Concord.*
Child, Roswell Towle,	18	*m. e.*	*Pembroke.*
Childs, Randall,	18	*a.* and *s.*	*Manchester.*
Church, Kingsley Dearborn,	14	*m. e.*	*Hampton.*
Cleveland, Margaret Lily,	17	*h. e.*	*Stowe, Vt.*
Clough, Cecil Edward,	6	*a.* and *s.*	*Greenland.*
Cohen, Abraham Louis,	13	*a.* and *s.*	*Portsmouth.*
Coker, Roland Stanwood,	18	*a.* and *s.*	*Salem, Mass.*
Colburn, Elmer Metford,	16	*a.*	*Somersworth.*
Colburn, Ruth Emeline,	24	*a.* and *s.*	*Temple.*
Cole, George Wallace,		*m. e.*	*Salem Depot.*
Colton, Leona Brewster,	16	*h. e.*	*Boston, Mass.*
Connell, Morelle Meath,	17	*h. e.*	*Rochester.*
Conner, Solon Dolloff,	38	*a.*	*Exeter.*
Cook, Albert Spaulding,	11	*a.* and *s.*	*Fremont.*
Cooley, Roland Robert,	9	*ch. e.*	*Wilton.*
Cotton, John Melville,	15	*e. e.*	*Portsmouth.*
County, Lillian Gertrude,	18	*a.* and *s.*	*Manchester.*
Courtney, Samuel Edward, Jr.,	16	*a.* and *s.*	*Boston.*
Craig, Thomas Jeffers,	18	*ch. e.*	*Portsmouth.*
Cross, Clarence Arthur,	19	*a.*	*Derry.*
Currier, Maurice Emerson,	40	*a.* and *s.*	*Dover.*
Curtis, Lillian Frances,	18	*a.* and *s.*	*Durham.*
Davis, Bernard Milan,	19	*a.*	*Antrim.*
Davis, Louise Grosvenor,	18	*a.* and *s.*	*Newton.*
Dodge, Charles Frank,	18	*ch. e.*	*Contoocook.*
Dore, Nellie Jemima,	17	*h. e.*	*Mirror Lake.*
Doughty, Marion Belle,	11	*a.* and *s.*	*Berwick, Me.*
Dow, Harold Wright,	18	*m. e.*	*Warner.*
Doyle, Jeremiah Joseph, Jr.,	3	*a.* and *s.*	*Nashua.*
Dutton, Evelyn Florence,	16	*h. e.*	*Dracut.*
Emery, Roland True,	6	*a.* and *s.*	*Limerick, Me.*
Emmes, Marjorie Steele,		*a.* and *s.*	*Peterborough.*
Farnum, Everett Hollis,	34	*a.* and *s.*	*Suncook.*
Field, Richard Francis,	27	*a.*	*Nashua.*
Fitts, Dana Wheat,	17	*a.* and *s.*	*Manchester.*
Flanders, Dorothy A.,	16	*a.* and *s.*	*Laconia.*
Fluet, Rita Beatrice,	17	*a.* and *s.*	*Dover.*
Forbes, Harland Clement,	24	*e. e.*	*Colebrook.*

Name.	Hours' Credit.	Course.	P. O. Address.
ord, Harriet May,	18	*a.* and *s.*	*South Danbury.*
ranklin, Jeremiah Edward,	15	*ch. e.*	*Franklin.*
rench, Harold Gordon,	19	*a.*	*Hudson.*
adbois, Edgar L.,	15	*a.* and *s.*	*Manchester.*
errish, Mary Elizabeth,	17	*h. e.*	*Dover.*
lidden, Robert Leslie,		*m. e.*	*Dover.*
oodwin, Harvey Hamblet,	16	*a.*	*Leominster.*
raham, Edward Dewey,	29	*a.*	*Newington.*
rant, Leland Elford,	18	*ch. e.*	*Salmon Falls.*
raves, John Arthur,		*e. e.*	*Halcyon.*
allissey, Harold James,		*a.* and *s.*	*Nashua.*
amblet, Theodore Clement,	9	*m. e.*	*Lawrence.*
amilton, William Alexander,	10	*a.* and *s.*	*Dover.*
anscom, Florence Evelyn,	17	*a.* and *s.*	*South Berwick, Me.*
anscom, Grace May,	17	*a.* and *s.*	*Somersworth.*
arding, Louise Eva,	14	*a.* and *s.*	*West Lebanon.*
artwell, Robert William,	24	*a.*	*Littleton, Mass.*
atch, Florence Durkee,	18	*a.* and *s.*	*Exeter.*
auler, Arthur,	18	*m. a. t.*	*Fitchburg, Mass.*
ayes, Clifton Russell,	18	*e. e.*	*Dover.*
ayward, Charles Prescott,	19	*a.*	*Temple.*
edberg, Irving Wilfred,	15	*a.*	*Worcester, Mass.*
elff, Otto Maximilian,	18	*a.* and *s.*	*Keene.*
ennessey, Mary Margaret,	17	*h. e.*	*Dover.*
ewitt, Ernest Warden,	16	*e. e.*	*Durham.*
ill, Frank Richard,	19	*e. e.*	*Dorchester.*
iscock, J. Austin,	14	*a.* and *s.*	*Conway.*
obbs, Horace Eastow,	17	*a.* and *s.*	*Hampton.*
obert, Edward Joseph,		*m. e.*	*Marlborough.*
odges, George Albert,		*a.*	*Antrim.*
olmes, Myron Gerrish,	13	*a.*	*Northwood.*
ubbard, Oliver Jones,	19	*a.*	*Walpole.*
udson, Alan Bedford,	12	*a.* and *s.*	*Cambridge, Mass.*
unt, Raeburn Stanley,	17	*a.* and *s.*	*Cornish Flat.*
use, Esther,	13	*a.* and *s.*	*Manchester.*
ussey, Silas Frank,	10	*e. e.*	*Rochester.*
utchins, Roger Dennett,	34	*a.* and *s.*	*Northwood Ridge.*
neau, Rudolph,		*e. e.*	*Somersworth.*
nness, Lyle Clayton,	20	*ch. e.*	*South Danbury.*
hnson, Ralph Nathan,	19	*a.*	*Newport.*
nes, Hazel Frazier,	13	*a.* and *s.*	*Exeter.*
avanaugh, Edward Charles,	18	*m. e.*	*Somersworth.*
eene, Harold Marston,	18	*e. e.*	*Hampton.*

Name.	Hours' Credit.	Course.	P. O. Address.
Keene, LaRoy Dwight,	16	*e. e.*	*Kittery, Me.*
Kelleher, Helena Katherine,	18	*a.* and *s.*	*Dover.*
Kibbee, Leslie Maynard,		*a.* and *s.*	*Keene.*
Kimball, Ralph Walter,	18	*ch. e.*	*Milton.*
Knox, Alice R.,	17	*a.* and *s.*	*Madbury.*
Knox, Henry Berry,		*a.*	*Dover.*
Knox, William Edward,	13	*e. e.*	*Dover.*
Ladd, Bessie Ruth,	17	*a.* and *s.*	*Epping.*
Ladd, Frank Watson,	44	*e. e.*	*Contoocook.*
Ladd, Harold Marden,	37	*a.*	*Bristol.*
Lagasse, Felix Scott,	19	*a.*	*Nashua.*
Langley, Delia Frances,	18	*a.* and *s.*	*Durham.*
Langley, Marland George,	26	*a.* and *s.*	*Durham.*
Lannon, John Martin,	16	*e. e.*	*Penacook.*
Leahy, Elinor Frances,	17	*a.* and *s.*	*Somersworth.*
Leavitt, Harold Irving,	49	*e. e.*	*Lowell, Mass.*
Levingston, Oscar	17	*a.* and *s.*	*Concord.*
Levy, Samuel,	16	*e. e.*	*Portsmouth.*
Little, Ernest Parker,	18	*ch. e.*	*Concord.*
Loeffler, Julius Paul,		*a.* and *s.*	*Lisbon Falls, Me.*
Lorden, Earl Eastman	14	*ch. e.*	*Gerrish.*
Lyford, Sidney John,	16	*a.*	*Exeter.*
McCarthy, Daniel Harold,	10	*e. e.*	*Dover.*
McGettigan, Francis Laurence,	19	*a.*	*Wilton.*
McIntyre, Harold Gordon,	16	*m. e.*	*Dover.*
McKelvie, Carl Donald,	8	*a.* and *s.*	*Manchester.*
McKenzie, George, Jr.,	14	*m. a. t.*	*Franconia.*
McLean, Harold Russell,	10	*m. e.*	*Greenville.*
McWeeney, Annie Madaleine,	17	*a.* and *s.*	*Nashua.*
Madden, Donald Burbank,	19	*a.*	*Antrim.*
Marshall, John Samuel,	17	*a.* and *s.*	*Kingston.*
Marston, James Richard,	19	*a.*	*Conway.*
Mattoon, Donald Potter,	19	*a.*	*Claremont.*
Meader, Helen Hawkes,	19	*a.* and *s.*	*Dover.*
Meras, Norman Eugene,	18	*e. e.*	*Exeter.*
Meserve, Anna Howard,	14	*h. e.*	*Framingham.*
Miller, Dorothy,	17	*a.* and *s.*	*South Berwick.*
Morrill, Alden Seth,	19	*a.*	*Gerrish.*
Morrill, Edith Grace,	14	*a.* and *s.*	*Penacook.*
Morse, Errol Stanley,	18	*a.* and *s.*	*Tilton.*
Morse, Horace Edwin,	14	*a.* and *s.*	*Haverhill.*
Murther, Charles Bernard,	19	*a.* and *s.*	*Nashua.*
Muzzey, Frank Elbridge,	18	*e. e.*	*Derry.*

Name.	Hours' Credit.	Course.	P. O. Address.
ichols, George Edwin,	14	*e. e.*	*Hopedale, Mass.*
ightingale, Burgess,	19	*a.*	*Durham.*
sen, Olga Matilda,		*a.* and *s.*	*Durham.*
Malley, Henry Francis,	18	*a.* and *s.*	*Worcester, Mass.*
sborne, William Downing,	7	*e. e.*	*Gonic.*
rmenter, Draper Watts,	19	*a.*	*Hudson.*
rsons, Joseph,	17	*a.* and *s.*	*South Berwick.*
rry, Robert,	19	*a.* and *s.*	*Manchester.*
terson, Henry Frederick,	18	*ch. e.*	*Manchester.*
elps, George Osborn,	11	*ch. e.*	*Nashua.*
ilbrick, Ruth Marguerite,	17	*a.* and *s.*	*North Hampton.*
llard, Shirley Everett,	16	*m. e.*	*Newport.*
rescott, Frank Dunning,	32	*e. e.*	*Franklin.*
utnam, Robert Cate,	4	*e. e.*	*Belmont, Mass.*
eardon, Charles Edward,	15	*a.* and *s.*	*Concord.*
eed, Harold Elwin,	16	*e. e.*	*Newport.*
ees, Walford Tupper,	18	*a.* and *s.*	*Nashua.*
emick, Frances Elizabeth,	7	*a.* and *s.*	*Portsmouth.*
eynolds, Addie Louise,	22	*a.* and *s.*	*Rochester.*
ice, Andrew Carl,		*a.* and *s.*	*Wilbraham, Mass.*
iel, Edmund George,	19	*a.*	*Laconia.*
ollins, Howard Arthur,	19	*a.*	*West Alton.*
oyal, Norman Cole,	18	*e. e.*	*Edgartown, Mass.*
ussell, Clarence Rufus,	11	*e. e.*	*Exeter.*
nders, Sarah Frances,	17	*h. e.*	*Durham.*
wyer, Alfred Henderson,	19	*a.*	*Concord.*
ammon, Leon Pike,	12	*e. e.*	*Stratham.*
hurman, Elsie Leonora,	17	*a.* and *s.*	*Portsmouth.*
ott, Alice Hovey,	18	*a.* and *s.*	*Durham.*
ovell, Paul Hayward,	18	*m. e.*	*Haverhill.*
and, Dorothy Belle,	17	*h. e.*	*Manchester.*
aw, Clifton Frank,	17	*a.* and *s.*	*Tilton.*
epherd, Charles William,	18	*ch. e.*	*Sharon, Mass.*
erwood, Irving Frederick,	14	*m. e.*	*Plymouth.*
monds, Louise Priscilla,	17	*h. e.*	*Manchester.*
nith, Clara Meredith,	19	*a.* and *s.*	*Hollis.*
nith, Louis Hutchinson,	19	*a.*	*White River Jct., Vt.*
derlund, Reginald Albanus,	18	*m. e.*	*Manchester.*
inney, Emerson Sumner,	15	*m. e.*	*Portsmouth.*
rague, Mary Gertrude,		*h. e.*	*Hinsdale.*
rague, Marion Wilhelmina,	17	*h. e.*	*Hinsdale.*
alker, Argyle McMorine,	19	*a.*	*Newton.*
one, Fred Weare,	11	*m. e.*	*Andover.*

Name.	Hours' Credit.		P. O. Address.
Stone, Milton Dean,	19	*a.*	*Tilton.*
Sweetser, Harold Caswell,	38	*a.* and *s.*	*Portsmouth.*
Swett, Leon Merrill,	36	*e. e.*	*Berwick, Me.*
Taft, Lorado Edson,	19	*a.*	*Gloucester, Mass.*
Tenney, Wells Ernest,		*a.* and *s.*	*Concord.*
Thompson, Laurence Laroy,	18	*ch. e.*	*Tilton.*
Tibbetts, Percy Frederick,	16	*e. e.*	*Somersworth.*
Torrey, Frederick Lincoln,	19	*a.*	*Quincy, Mass.*
True, John George,	15	*e. e.*	*Kensington.*
True, Laurence Melbern,	13	*a.* and *s.*	*Hampton.*
True, Olive Lillian,	17	*h. e.*	*West Lebanon.*
Varrill, Roy Merton,	17	*a.* and *s.*	*Newfields.*
Walker, Kent,	19	*a.*	*Newmarket.*
Wallis, Harriet Blanche,	17	*h. e.*	*Laconia.*
Ward, Janet,	19	*a.* and *s.*	*Hampton.*
Weeks, Charles Adelbert,	12	*e. e.*	*Meredith.*
Weldon, Ralph Sharples,	18	*a.*	*West Concord.*
Wentworth, Dorothy Pauline,	16	*a.* and *s.*	*Dover.*
Weston, George Washington,	7	*a.*	*Wilton.*
Whedon, Roger Parcher,	20	*ch. e.*	*Manchester.*
Whipple, Gladys Louise,	39	*h.e.*	*Lebanon.*
Whitney, Orrin Calvin,	19	*a.*	*Charlestown.*
Wiggin, Walter Wentworth,	19	*a.*	*Sanbornville.*
Wiggins, Gilbert Newton,	18	*ch. e.*	*New London.*
Woodward, Bert Arthur,	15	*ch. e.*	*Andover.*
Woodward, Henry Oscar,	25	*a.*	*New Ipswich.*
Woodward, Howard True,	19	*a.*	*Berlin.*
Wooster, George Edward,	19	*a.*	*Concord.*
Worcester, Zelia Zeneida,	64	*h. e.*	*Berwick, Me.*

SECOND YEAR TWO-YEAR MEN IN AGRICULTURE.

Davis, Homer Cleveland,	57	*Colebrook.*
Fletcher, Herman Russell,	62	*Plymouth.*
Harris, George Webster,	58	*Pelham.*
Hill, Orton Francis,	58	*Warner.*
Irvine, Howard Thompson,	82	*Exeter.*
Sanders, Robert Carl,	52	*Dover.*
Wagner, Bleeker Lloyd,	55	*Waban, Mass.*
Whipple, Earle Cass,	64	*Goffstown.*

FIRST YEAR TWO-YEAR MEN IN AGRICULTURE.

Name.	Hours' Credit.	P. O. Address.
emian, Souren Seghpos,	19	*Portsmouth.*
ırclay, Robert Ancel,		*Winthrop, Mass.*
nnett, Stuart Southworth,	14	*Worcester, Mass.*
ırter, Charles Henry,	16	*Bradford.*
ickering, Louis W.,		*West Chesterfield.*
ancey, Forrest Wiggin,		*Exeter.*
nner, Solon Dolloff,		*Exeter.*
liott, Harry Duaine,	12	*Dublin.*
ans, Paul Blodgett,	19	*Nashua.*
gg, Vertner Madison,		*Littleton.*
rd, Robert,	19	*Danbury.*
le, Lawrence Dalbeer,	19	*Suncook.*
old, John Exshaw,	19	*Hanover.*
imes, Freeman Mark,	19	*West Medford, Mass.*
ath, Ralph Eugene,	19	*Canterbury.*
lmes, Bryon Lucy,	6	*Northwood.*
sley, Charles Truman,	19	*Haverhill, Mass.*
ann, Arthur R.,	19	*Melrose Hglds. Mass.*
rthup, Harley Frederick,	19	*Williamstown, Mass.*
good, Benjamin Horace E.,		*Nashua.*
ıy, George Clifton,		*Londonderry.*
ımery, Harold Linwood,	19	*Danville.*
denwater, Adolph Winfield,	19	*New York, N. Y.*
drabin, Andrew George,	16	*Grafton.*

SPECIALS.

omer, Minna,		*a.* and *s.*	*Dover.*
ıgbee, Rachael,	17	*a.* and *s.*	*Concord.*
irchild, Edward Thompson,	3	*a.* and *s.*	*Durham.*
awkridge, Emma Lois,	12	*a.*	*Newington.*
nness, Edith Wiggin,	3	*a.* and *s.*	*Dover.*
ıugher, Harold Batavia,	16	*a.*	*Worcester, Mass.*
orse, Alvin Stricklin,		*e.*	*Newmarket.*
ler, Lee Cartland,	16	*a.* and *s.*	*East Barrington.*

SUMMARY OF REGISTRATION, 1917–1918.

Compared with Registration Figures for Previous Year.

	Agriculture.										Arts and Science.						Engineering.						Men.		Women.		Total.	
	Reg.		A.H.&D.		For.		Gen.		Hort.		Gen.		H.E.		M.A.T.		Ch.E.		E.E.		M.E.							
	'16 '17	'17 '18	'16 '17	'17 '18	'16 '17	'17 '18	'16 '17	'17 '18	'16 '17	'17 '18	'16 '17	'17 '18	'16 '17	'17 '18	'16 '17	'17 '18	'16 '17	'17 '18	'16 '17	'17 '18	'16 '17	'17 '18	'16 '17	'17 '18	'16 '17	'17 '18	'16 '17	'17 '18
Seniors	...	...	9	10	3	2	1	6	5	5	29	24	13	9	7	...	6	7	11	4	1	2	60	49	25	20	85	69
Juniors	...	...	14	6	3	1	9	3	7	3	34	27	10	19	1	1	9	10	7	4	3	3	76	42	21	35	97	77
Sophomores	27	24	...	...	...	...	...	...	...	...	39	58	21	15	5	2	13	12	13	17	5	8	84	93	39	43	123	136
Freshmen	48	48	...	...	...	...	...	...	...	...	107	94	20	21	6	2	29	21	28	33	18	19	201	178	55	60	256	238
Total 4-year Students	75	72	23	16	6	3	10	9	12	8	209	203	64	64	19	5	57	50	59	58	27	32	421	362	140	158	561	520
Total by Divisions	...	...	...	...	...	...	...	...	126	108	...	...	...	...	292	272	...	...	...	...	143	140	...	...	...	...	...	...
Graduates	3	...	...	...	...	...	...	...	...	...	2	2	...	...	...	...	1	...	...	...	...	...	5	1	1	1	6	2
2d Two-Year	29	8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	29	8	...	...	29	8
1st Two-Year	34	24	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	34	24	...	...	34	24
Specials	3	2	...	...	...	...	...	...	...	...	2	5	...	...	...	...	...	...	2	1	...	...	3	4	4	4	7	8
Courses Not Given 1917–18	6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	21	...	2	...	20	...	...	...	20	...
Totals	150	106	23	16	6	3	10	9	12	8	213	210	64	64	19	5	58	50	82	59	29	32	521	399	145	163	666	562
Totals by Divisions	...	...	...	...	...	...	...	...	201	142	...	...	...	...	296	279	...	...	...	...	169	141	...	...	...	...	...	...

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UNIVERSITY OF ILLINOIS

VOLUME X NUMBER 1

The New Hampshire College Announcement and Register

1919—1920

FIFTY-FIRST YEAR

REGISTER, - - 1918-1919
ANNOUNCEMENT, 1919-1920

Durham, New Hampshire
Published by the College

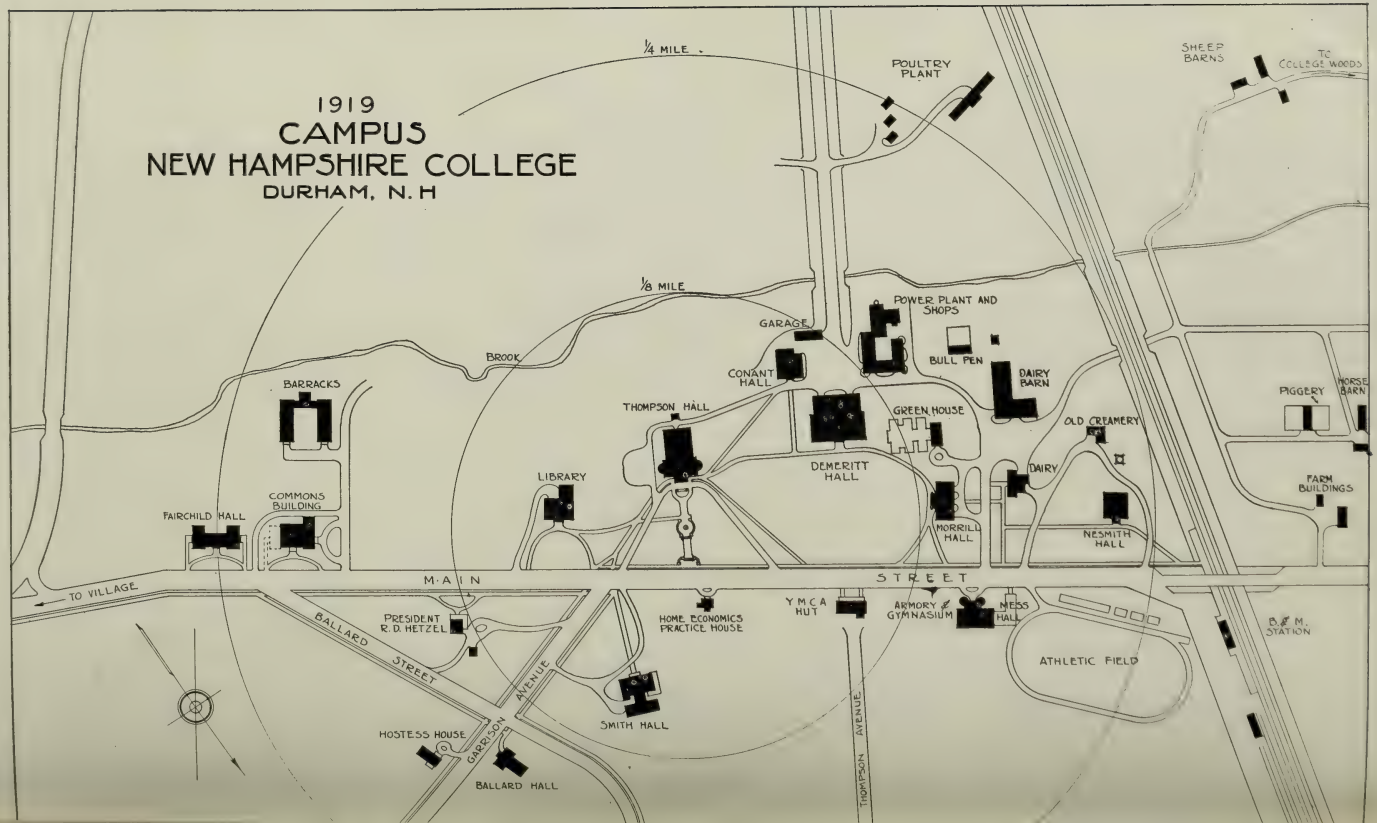
APRIL, 1919

The New Hampshire College of Agriculture and the Mechanic Arts Bulletin

Durham, New Hampshire

APRIL, 1919

Entered as second class matter, August 5, 1907, at the Post Office at Durham, N. H., under the Act of Congress of July 16, 1894


1919
CAMPUS
NEW HAMPSHIRE COLLEGE
DURHAM, N. H
1/4 MILE
1/8 MILE
POULTRY PLANT
SHEEP BARNS
TO COLLEGE WOODS
POWER PLANT AND SHOPS
GARAGE
BULL PEN
DAIRY BARN
CONANT HALL
BROOK
BARRACKS
THOMPSON HALL
GREEN HOUSE
OLD CREAMERY
PIGGERY
HORSE BARN
DEMERITT HALL
DAIRY
FARM BUILDINGS
LIBRARY
COMMONS BUILDING
FAIRCHILD HALL
MORRILL HALL
NESMITH HALL
TO VILLAGE
MAIN STREET
PRESIDENT R. D. HETZEL
HOME ECONOMICS PRACTICE HOUSE
Y.M.C.A HUT
ARMORY & GYMNASIUM
MESS HALL
B. & M. STATION
BALLARD STREET
AVENUE
ATHLETIC FIELD
SMITH HALL
HOSTESS HOUSE
GARDISON
BALLARD HALL
THOMPSON AVENUE

GENERAL VIEW OF CAMPUS

GREENHOUSES

CHEMISTRY BUILDING & SHOPS

DEMERITT HALL
ENGINEERING BUILDING

LIBRARY

PRESIDENT'S RESIDENCE

B & M STATION

MORRILL HALL
AGRICULTURAL BUILDING

DAIRY BUILDING

NEWELL HALL
EXPERIMENT STATION

DAIRY BARN

HORSE BARN

HORTICULTURAL FARM BUILDINGS

FAIRCHILD HALL
MEN'S DORMITORY

SMITH HALL
WOMEN'S DORMITORY

BALLARD HALL
WOMEN'S DORMITORY

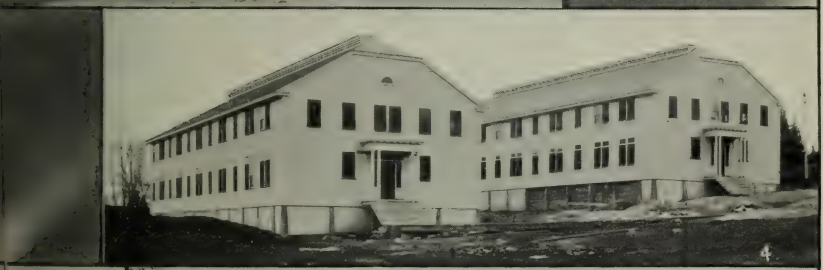


FIG
HIPSHIRE COLLEGE REGIMENT ON PARADE
C. HUT
AS CONSTRUCTED BY THE S. A. T. C.
HE ECONOMICS PRACTICE HOUSE
AWING OF "THE COMMONS" SHOWING BUILDING AS IT WILL APPEAR
COMPLETED. THE TWO MAIN UNITS WILL BE READY FOR OCCUPANCY
ALL

CALENDAR

1919

JANUARY.

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1920

JANUARY.

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DECEMBER.

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COLLEGE CALENDAR 1919-1920

1919

FALL TERM

Sept.	16	Monday	Entrance Examinations begin
Sept.	23	Tuesday	Registration Day
Sept.	24	Wednesday	Recitations begin at 8:00 A. M.
Oct.	8	Wednesday	Annual Meeting of the Board of Trustees
Nov.	5	Wednesday	Mid-Term Warnings to be filed
Nov.	26	Wednesday	Thanksgiving Recess begins at noon
Nov.	28	Friday	Thanksgiving Recess ends at 10:00 A. M.
Dec.	19	Friday	Fall Term closes at 4:00 P. M.

1920

WINTER TERM

Jan.	2	Friday	Registration Day
Jan.	3	Saturday	Recitations begin at 8:00 A. M.
Jan.	14	Wednesday	Meeting of the Board of Trustees
Feb.	11	Wednesday	Mid-Term Warnings to be filed
Mar.	24	Wednesday	Winter Term closes at 4:00 P. M.

SPRING TERM

April	1	Thursday	Registration Day
April	2	Friday	Recitations begin at 8:00 A. M.
April	14	Wednesday	Meeting of the Board of Trustees
May	12	Wednesday	Mid-Term Warnings to be filed
May		Thursday	Junior House Parties begin at 4:00 P. M.
		Sunday	Junior House Parties close, 2:00 P. M.
May	30	Sunday	Memorial Day
June	17	Thursday	Senior Examinations end
June	20	Sunday	Baccalaureate Sermon
June	22	Tuesday	Class Day
June	23	Wednesday	Commencement Day

* New students are urged to present themselves for Registration Monday, September 22.

BOARD OF TRUSTEES

His Excellency, Governor John H. Bartlett, a.b., *ex-officio*

President, Ralph D. Hetzel, a.b., ll.b., ll.d., *ex-officio*

*Hon. Harvey L. Boutwell, b.s., ll.d., *President* — Malden, Mass.
Sept. 1, 1911, to Sept. 1, 1920

Hon. James A. Tufts, a.b., *Secretary* — Exeter
Jan. 10, 1914, to June 14, 1919

*Hon. Edward H. Wason, b.s., d.sc. — Nashua
Jan. 16, 1906, to Aug. 1, 1919

Hon. Richard W. Sulloway, a.b. — Franklin
May 13, 1909, to Oct. 31, 1921

Hon. William H. Caldwell, b.s. — Peterborough
July 29, 1912, to July 29, 1921

Hon. Eugene S. Daniell — Greenland
June 14, 1916, to June 14, 1919

Hon. Roy D. Hunter — West Claremont
June 14, 1916, to June 14, 1919

Hon. Dwight L. Hall, a.b. — Dover
Oct. 29, 1915, to July 17, 1921

Hon. Andrew L. Felker — Meredith
July 17, 1917, to July 17, 1920

Hon. William T. Nichols, a.b. — Manchester
Feb. 15, 1918, to Feb. 15, 1921

Hon. John C. Hutchins — North Stratford
Oct. 3, 1918, to Aug. 30, 1920

*Elected by the Alumni.

THE COLLEGE FACULTY* AND TEACHING STAFF

RALPH D. HETZEL, A.B., LL.B., LL.D., *President of the College*

OFFICERS OF ADMINISTRATION

RALPH D. HETZEL, A.B., LL.B., LL.D., *President of the College*
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* The faculty is composed of the president of the college, full professors, associate professors, assistant professors, and the director of the experiment station and extension work.

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WALTER C. O'KANE, A.M., *Professor of Economic Entomology*
CHARLES JAMES, F.I.C., *Professor of Chemistry*
ALFRED E. RICHARDS, PH.D., *Professor of English*
ORMOND R. BUTLER, PH.D., *Professor of Botany*
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HORACE L. HOWES, B.S., PH.D., *Professor of Physics*
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WILLIAM H. WOLFF, M.S., *Associate Professor of Pomology*
LEON W. HITCHCOCK, B.S., *Associate Professor of Electrical Engineering*
HAROLD W. SCUDDER, B.S., *Associate Professor of English*
ALTON W. RICHARDSON, B.S., *Associate Professor of Poultry Husbandry*
FRED C. WERKENTHIN, A.M., *Associate Professor of Botany*

† Arranged in order of seniority of appointment.
‡ Absent on leave.

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FRIEDA REINER, B.S., *Assistant Professor of Home Economics*
OLUS J. STEWART, A.B., PH.B., M.S., *Assistant Professor of Chemistry*
MARION O'K. MCKAY, B.S., A.M., PH.D., *Assistant Professor of Economics*
J. R. HEPLER, B.S., *Assistant Professor of Vegetable Gardening*
THOMAS J. LATON, B.S., *Assistant Professor of Drawing*
CLEMENT MORAN, A.B., *Assistant Professor of Physics*
CLIFFORD J. FAWCETT, B.S., *Assistant Professor of Animal Husbandry*
CLARENCE R. CLEVELAND, A.B., *Assistant Professor of Economic Entomology*
LOUISE KNIGHT, B.S., *Assistant Professor of Home Economics, and Acting Head of Department*
JAMES H. MARCEAU, A.B., *Assistant Professor of Modern Languages*
DONALD C. BABCOCK, A.M., B.D., *Assistant Professor of History*
M. GALE EASTMAN, M.S., *Assistant Professor of Agronomy*

INSTRUCTORS†

JAMES MACFARLANE, *Instructor in Floriculture*
LYMAN J. BATCHELDER, *Instructor in Wood Shop and Foundry Practice*
CARL A. GARABEDIAN, *Instructor*
HAROLD D. MCBRIDE, *Instructor in Machine Work and Forging*
ARABELLA S. LIVINGSTON, B.S., *Instructor in Home Economics*
EARL L. GETCHELL, B.S., *Instructor in Mechanical Engineering, and Acting Head of Department*
MELVIN M. SMITH, B.S., M.A., *Instructor in Chemistry*
JESSE PIERCE, B.S., *Instructor in Mathematics*
HEBER F. DEPEW, B.S., *Instructor in Dairy Husbandry*
ALMA D. JACKSON, M.A., *Instructor in Zoölogy*
HORACE L. OLSON, B.S., *Instructor in Mathematics*
RUTH RICHARDSON, A.B., *Instructor in English*
HELEN B. BARTLETT, *Instructor in Physical Education*
PAUL H. SHRAMM, *Instructor in Drawing*
VICTOR W. BENNETT, A.M., *Instructor in Accounting and Sociology*
JAMES HAYES, *Sergeant*
GUSTAVE WOLFF, *Sergeant*

ASSISTANTS†

HEMAN C. FOGG, B.S., *Assistant in Chemistry*
IRENE M. HUSE, B.S., *Assistant in Sociology*
B. E. HUGGINS, *Assistant in Dairy Husbandry*

† Arranged in order of seniority of appointment.

SPECIAL INSTRUCTORS

FOR THE STUDENTS' ARMY TRAINING CORPS

J. S. Welch, *Auto Truck Division*, S.A.T.C.
H. W. Sanders, *Auto Truck Division*, S.A.T.C.
E. H. Watson, *Auto Truck Division*, S.A.T.C.
L. N. Paine, *Auto Truck Division*, S.A.T.C.
S H. Craig, *Concrete Division*, S.A.T.C.
J. H. King, *Concrete Division*, S.A.T.C.
A. L. Wales, *Carpentry Division*, S.A.T.C.
J. H. Crosby, *Carpentry Division*, S.A.T.C.
C. H. Crowell, *Carpentry Division*, S.A.T.C.
H. T. Grant, *Carpentry Division*, S.A.T.C.
Harry Bickford, *Carpentry Division*, S.A.T.C.
Robin Beach, *Electrical Division*, S.A.T.C.
P. F. Casey, *Electrical Division*, S.A.T.C.
L. W. Crossley, *Electrical Division*, S.A.T.C.
F. S. Farnham, *Electrical Division*, S.A.T.C.
B. A. Lougee, *Electrical Division*, S.A.T.C.
H. A. Crouse, *Blacksmith Division*, S.A.T.C.
L. W. McArthur, *Cooks and Bakers Division*, S.A.T.C.

Note.—In addition to the regular college faculty, it was found necessary to secure a number of additional instructors. The above named men devoted themselves wholly to S.A.T.C. work.

NEW HAMPSHIRE AGRICULTURAL EXPERIMENT STATION

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NEW HAMPSHIRE COLLEGE
EXTENSION SERVICE

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Martha E. Fisher, *Stenographer*
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HISTORICAL SKETCH

The New Hampshire College of Agriculture and the Mechanic Arts was created by an act of the New Hampshire legislature in 1866 and was established at Hanover as a state institution, in connection with Dartmouth College. In its foundation the state legislature had accepted the conditions of an act of the federal congress of July 2, 1862, entitled "An act donating public lands to the several states and territories which may provide colleges for the benefit of agriculture and the mechanic arts." The state had accepted the land grant three years earlier, July 9, 1863.

In 1893 the college was moved from Hanover to Durham. This action followed the death of Benjamin Thompson, a farmer of Durham, who died January 30, 1890, and left to the college his entire estate, excepting a few minor reservations. The legislature accepted this bequest March 5, 1891, and appropriated the necessary money for the first buildings.

Mr. Thompson wrote in his will, "My object being mainly to promote the improvement of agriculture, though willing that the college to be established should also provide for the mechanic arts, it is my will that the institution to be established by the state . . . shall be called and designated . . . The New Hampshire College of Agriculture and the Mechanic Arts, if that shall be the wish of the state; and that in addition to the instruction to be given therein, as provided by my said will, there shall be taught only such other arts or sciences as may be necessary to enable said state to fully avail itself of said donation of lands by the government in good faith, which two branches of instruction shall be the leading objects of said institution or college."

Shortly before the state accepted this bequest of Mr. Thompson the legislature further provided for the college by

accepting the provisions of an act of congress known as the Morrill Bill. This legislation made available federal appropriations "for instruction in agriculture, the mechanic arts, the English language, and the various branches of mathematical, physical, natural and economic science, with special reference to their applications in the industries of life, and to the facilities for such instruction."

Although the college was able to make use of the Thompson land as early as 1893, it was not until 1910 that the income from this endowment of almost $800,000 became available. At present the college has an annual income from the Thompson funds of nearly $32,000. It also receives the moneys which are available as the result of the acts of congress referred to, and the biennial appropriations of the state legislature.

The college administration is in charge of a board of thirteen trustees. The governor of the state and the president of the college are *ex-officio* members. The college alumni elect two trustees, and the others are appointed by the governor with the advice and consent of the council.

EXPERIMENT STATION

A branch of the college, known as the New Hampshire Agricultural Experiment Station, was established by the state, August 4, 1887, under an act of congress of March of that year. Its purpose is to acquire agricultural knowledge and to bring its information to the people of the state. The station is actively engaged in this work not only in Durham but throughout the commonwealth. Members of the agricultural faculty of the college serve on the station staff.

EXTENSION SERVICE

Extension work in agriculture has been carried on in New Hampshire by members of the college and station staffs ever since the organization of New Hampshire College and Experiment Station. The first financial aid specifically for non-resident teaching or extension work, however,

came in 1911 when the New Hampshire legislature appropriated a sum of money for this purpose. In May of the same year the board of trustees recognized the extension activities of the college as being among the important functions of the institution and appointed a director of extension work.

The passage of the Smith-Lever law three years later, which provided the state with federal funds for conducting extension work in agriculture and home economics, gave a decided impetus to this type of teaching. During the last four years the extension service of New Hampshire College has grown rapidly, and its activities have been greatly increased.

The number of extension workers has been increased until there are at present fifty-three members of the extension staff giving full time to the service. The members of the college and station staffs also contribute a large amount of time and render valuable assistance in carrying out the extension program.

SMITH-HUGHES WORK

The enactment by the federal government of the Smith-Hughes law in 1917 made available to the state of New Hampshire $15,000; federal moneys to be matched by an equal amount of state or local moneys. One third of this is to be used in the training of teachers of agriculture, home economics, and industrial education. Two thirds of the amount is to be used in partial payment of the salaries of teachers of these subjects in those public secondary schools which meet the requirements as set up by the Federal Board for Vocational Education in regard to teachers, equipment, etc. The New Hampshire State Board for Vocational Education has designated the state college as the institution which shall do the teacher training work provided for in this act.

VOCATIONAL SECTION—STUDENTS' ARMY TRAINING CORPS

With the declaration of war against Germany, the administration and faculty of New Hampshire College desired that the institution serve the government in every way possible.

The college year was closed May 1, 1918, six weeks earlier than usual, and on May 16, 1918, the first detachment of U. S. Army soldiers, men carefully chosen because of their previous training or experience, arrived for special vocational training. The vocational work was carried on with detachments coming and going throughout the season, until December 14, 1918, when the last detachment left.

Ten different kinds of vocational work were organized and carried forward. The following table gives statistics of the different divisions:

Division	*No. Men*	*Construction Work*
Auto Truck	308	200 cars repaired.
Concrete	197	2,742 sq. yds. sidewalk and 1143 cubic yds. foundation laid.
Carpentry	339	8 large, 4 medium and 3 small buildings constructed. Only 3 of the 15 were temporary.
Electrical	206	Several buildings wired. Wiring difficulties overcome.
Blacksmith	50	Large amount of auto repair and other work done.
Machinist	87	Large amount of auto repair and other work done.
Gas Engine	42	Large amount of auto repair and other work done.
Topographical Drafting	7	Plans made for use of other divisions.
Cooks and Bakers	17	Practical work in mess hall.
Clerks	16	Practical work at military headquarters office.
Total	1,269	Soldiers given special training.

COLLEGIATE SECTION—STUDENTS' ARMY TRAINING CORPS

When the War and Navy Departments announced their policy with reference to the using of colleges for the training of student candidates for officers' positions in the army and navy, the entire teaching staff of the college was eager to coöperate in the carrying out of this new military policy of the government, and a collegiate section of the Students' Army Training Corps was at once organized. With no hesitation a program of studies was constructed according to the wishes of the government. Members of the faculty having no opportunity to teach their special subjects, in the spirit of unquestioning patriotism accepted the instruction of such subjects in the government's program as they were qualified to teach.

The Collegiate Section followed explicitly from the first the needs of the government without regard to academic tradition or former educational policies at the institution. Because of this the college from the beginning received the commendation of the visiting representatives of the War Department, both for the efficiency of the instruction offered and the unqualified effort of the institution to fulfill the purposes of the Collegiate Section.

SITUATION

Durham, the home of the college, is an attractive village on the Portland division of the Boston and Maine railroad, sixty-two miles from Boston, fifty-four from Portland, Me., and five from Dover, N. H., a city of 13,000 population. Good train service makes the college easily accessible from all parts of the state.

Durham is one of the historic towns of New Hampshire. In the early days it was the home of a prosperous shipbuilding industry. Situated at the head of tidewater on the Oyster River, it served as a distributing center for the interior of the state. During the Revolutionary War it was famous as the home of General John Sullivan. Near his home, in the village, the state has erected a fitting monument to his memory.

BUILDINGS AND EQUIPMENT

BUILDINGS

The frontispiece form with its accompanying cuts give a fair idea of the buildings of the college. While systematically arranged in groups, they are scattered over a considerable area and thus make up a very attractive campus.

Thompson Hall is the main administration building and from its eminence commands a view of the entire campus. It contains, besides recitation rooms, the offices of the president, dean, registrar, business secretary, bookstore, and headquarters of the departments of modern languages, English, education and psychology, zoölogy, economic entomology, and home economics. The gymnasium for women is also in this building.

Morrill Hall is the headquarters of the agricultural division of the college and also has the office of the director of the experiment station and the experiment station

library. In this building are the laboratories and lecture rooms of the departments of agronomy, animal husbandry, horticulture, poultry husbandry, and forestry. The building also contains a collection of farm implements and a cattle-judging room. The third floor provides quarters for agricultural extension workers, a reading room for agricultural students, and The Agricultural Club Room.

DeMeritt Hall.—The engineering building is the most prominent of the engineering group, and houses the departments of mechanical engineering, electrical engineering, physics, drawing and mathematics. It contains lecture, recitation, drawing, and office rooms for the several departments; also electrical, mechanical and physical laboratories, each one adapted to and equipped for its specific work.

Conant Hall is devoted exclusively to the department of chemistry. The second floor, containing lecture rooms and three laboratories, remains substantially as it has been for a number of years. The first floor has been recently fitted up with modern chemistry desks and other equipment to supply much needed additional laboratory facilities for students in chemistry. The building is thus well equipped for carrying on the chemical courses of the college, including those connected with chemical engineering, agriculture, and home economics.

The Library.—In accordance with an act of consolidation between the libraries of Durham and the college, the books of the Durham public library and the college are all shelved in one building, forming the Hamilton Smith Public Library. This consolidation makes an especially good collection, the scientific books of the college supplementing well the more popular books of the town library. The consolidated libraries number about 33,000 volumes and the reading room is supplied with 84 periodicals. The departments of sociology, of history and political science, and of economics are located in the library building.

Aside from the main library, each department has its working library of the more technical books and journals.

The library as a whole subscribes for 230 periodicals; 84 of them, non-technical in character, are kept in the periodical and children's rooms; the rest, in the various departmental libraries. Numerous daily and weekly papers are received by the library.

The Dairy Building is well arranged and equipped for purposes of dairy instruction. It contains a commercial creamery, with sanitary milk room, separator room, churning room, and cold storage room; laboratories for instruction in milk testing, milk inspection, farm butter and cheese-making, and bacteriology; also a reading and exhibition room; a class room and offices.

The Shop Buildings consist of a woodworking shop, a machine shop, a forge room, a foundry, the boiler house, and a general repair shop connected with the power and service department.

Two additions were made to the shops by the carpentry and concrete sections of the New Hampshire College U. S. Army Training Detachment during the fall of 1918. The first addition is a two-story building 32 feet by 60 feet, the first story being devoted to machine work and the second story devoted to woodwork. The second addition is a two-story and basement building, 32 feet by 89 feet. Both of the main floors will be devoted to woodworking machinery.

Locker rooms with lockers are provided for use of students taking subjects in shop work.

Nesmith Hall is occupied by the departments of chemistry and botany of the experiment station, and contains the laboratories of the department of botany of the college.

The Armory and Gymnasium contains the offices of the commandant and physical director, the rooms of the College Club and a large drill hall and gymnasium.

President's House.—The present structure is a substantial, attractive residence, erected in 1904 at an expense of $9,000. It replaced the original wooden structure which was burned in 1903.

Commons Buildings.—The legislature of 1917 provided $100,000 for erecting a much needed commons building. Disturbed conditions arising from the war prevented its construction in 1917. However, the contract calls for its completion in time for occupancy in September, 1919.

The building will provide convenient boarding facilities for the student body, by means of which it is expected the cost of board will be considerably lessened.

Fairchild Hall.—This building, erected in 1916 at a cost to the state of $60,000, was named in honor of the late president of the college. It is a handsome brick structure of colonial design, which furnishes accommodations for 106 men.

Dormitories for Women.—Smith Hall was made possible by the generosity of Mrs. Shirley Onderdonk, of Durham, who gave $16,000 as a memorial to her mother, Mrs. Alice Hamilton Smith. The remainder of the cost, $10,000, was provided by the state. By the aid of the carpentry and concrete divisions of the S.A.T.C., an annex has been added to the rear of the hall, which greatly increases the rooming facilities. The hall now accommodates 68 instead of 32 women, besides furnishing dining facilities for 125 women.

Ballard Hall is the second woman's dormitory owned by the college. At a cost to the state of only $12,000 it furnishes desirable accommodations for 45 women.

Each dormitory has a large reception room for social use. A competent matron is in charge of each building.

The Health Service.—A house in the village has been acquired by lease and is used partly as an overflow for the two women's dormitories, and partly as an infirmary for the care of students. A competent matron, who is also an experienced nurse has been secured, and the building has more than justified itself by its usefulness in the care of influenza patients.

Hostess House.—Through the efforts of the New Hampshire Federation of Women's Clubs, and the national

Y. W. C. A., a large house in the village has been leased and fitted up as a hostess house. Friends of students and visitors to the college may obtain temporary accommodations at reasonable rates, and the parlors are open constantly for the benefit of students. Located in a small village with no hotel facilities, the college is fortunate indeed to secure the double advantage of accommodations for its friends and supervised assistance in promoting the social life of the student body.

Practice House.—A modern house owned by the college and conveniently located on the college campus has been fitted up this year as a practice house for home economics students. Here they live during six weeks of their senior year, taking their turn at performing the varied household tasks under competent supervision.

Farm Buildings.—Besides the above, there are numerous farm and other buildings adapted to the needs of the several departments.

EQUIPMENT

Agronomy.—For the teaching of farm equipment and machinery, this department is provided with drainage levels for laying out drains, plane tables for making farm maps, polar planimeters for measuring plotted areas, a dynamometer and several other pieces of apparatus for studying draft problems. For farm crops work it has a very complete collection of dried specimens of the different forage crops, and the more important varieties of corn, wheat and oats. Seed testing apparatus, grass charts and other illustrative material form a part of the equipment.

The lecture room is equipped with a combined lantern and reflectoscope, together with a large number of lantern slides.

The soil physics laboratory contains soil bins, a compacting machine, chemical and torsion balances and various kinds of physical apparatus for the study of soils, including

that for the determination of specific gravity and for the making of mechanical analyses.

The agricultural museum contains the original "Daniel Webster plow" and other primitive models. It also contains many of the latest types of farm machinery, including plows, cultivators, harrows, mowers, planters, corn and grain binders, a thresher, manure spreader, different kinds of cattle ties, various makes of woven wire fences, etc.

The college farm, with its 500 acres of land, has a variety of soils suited for the growth of various farm crops. Land on nearby farms is rented for the growing of corn and potatoes so that good opportunities are afforded for practical work and demonstration in the production of field crops.

Animal Husbandry.—For the various subjects in animal husbandry use is made of the live stock of the college farm. The college owns a number of horses representing the draft type, and recently purchased two of the best pure bred Percheron mares in New England. In order to become acquainted with the carriage and roadster types, the students are taken to various stock farms where these types may be inspected and judged. For the study of sheep, the experiment station flock is used. During the past summer a modern piggery, capable of housing twelve brood sows with litters, was erected. In the agricultural building a large room is fitted up for the judging of live stock, and score cards with a scale of points for each kind of animal are used.

The 1919 legislature has appropriated $10,000 for a stock barn and $5,000 for live stock. This will provide for the purchase of pure bred beef cattle, sheep and swine, and will materially strengthen the equipment of the department.

The class room is provided with a stereopticon lantern and a large collection of lantern slides used to show the leading individuals of the different breeds of live stock. The herd books of the most prominent breeds are used for the purpose of familiarizing the student with the methods of tracing pedigrees and with the practices of breeders' associations.

Architecture and Drawing.—The department of architecture and drawing is well equipped to meet the needs of the subjects offered. The drafting rooms are supplied with tables and lockers and the free-hand studio with suitable stands and easels. For engineering and machine drawing there is an excellent collection of working models and machine parts, and various machines in other departments are available for this work. For free-hand drawing there is a good supply of geometric models, and for advanced work in charcoal drawing the nucleus of a good collection of plaster casts exists, consisting of historic ornament, details of plant and animal life and of the human form. For special work in this subject there is available the museum of casts, consisting of examples of antique and modern sculpture. For work in architectural drawing an excellent library of books and periodicals and blue prints of all classes of buildings are available for reference and use in the drafting rooms, while a goodly collection of samples of building materials is being added to from time to time.

Botany.—The department of botany has the usual laboratory equipment to meet the needs of the courses in general botany, plant physiology and bacteriology. In the advanced courses, owing to the connection of the department with the experiment station, students will find both the laboratory and greenhouse equipment ample for critical studies of plant diseases and plant nutrition.

Chemistry.—The several chemical laboratories are fairly well equipped. Each is supplied with most of the forms of apparatus required for its particular work. Besides all necessary glass and porcelain ware, this includes water baths, drying ovens, combustion furnace, muffle and assay furnaces, platinum dishes and crucibles, polariscope, spectroscope, balances, lantern and other lecture appliances.

Dairy Husbandry.—The dairy husbandry department offers excellent opportunities for instruction in technical and practical dairy work. The college creamery has all necessary machines and equipment. Electric motors fur-

nish power for the different machines. Milk from the college herd and milk and cream from nearby farms give sufficient material for the different laboratories. In the farm dairy room are hand separators and hand and small power churns. The milk testing and milk inspection laboratory is equipped with Babcock testers and other apparatus. The bacteriological laboratory has equipment necessary for instruction in dairy bacteriology.

The college dairy herd consists of representatives of the Guernsey, Jersey, Ayrshire, and Holstein breeds. Use is made of the herd for laboratory instruction in certain dairy husbandry subjects.

Electrical Engineering.—The laboratories for electrical engineering occupy the ground floor of the south end of DeMeritt Hall. The main laboratory is 104 feet by 36 feet and is used for testing dynamo electric machinery. In this main laboratory there is a large distributing switchboard, on which are mounted instruments, switches, circuit breakers, ground detectors, synchronizers and plugging devices so arranged that it is possible to connect the various rooms and convey thereto direct current and single, two-phase and three-phase alternating current of different voltages and frequencies.

In addition to this main laboratory there is a laboratory used for photometry, one for storage battery and one for high potential experiments. The laboratories are also provided with an instrument room, a mechanician's room and a dark room.

The general equipment of the laboratory includes various dynamos and motors for direct and alternating current, several transformers, one 75,000 volt high potential transformer, and the necessary measuring instruments and storage batteries adapted to the needs of students taking this course.

The department has received as a gift from Sears, Roebuck & Co., of Chicago, Ill., one electric light plant consisting of engine, dynamo, switchboard, and storage bat-

tery. The department has also received as a gift from the Domestic Engineering Company, one of the Delco-light sets including engine, dynamo, switchboard and storage battery. Each of these outfits are of the 32-volt type adapted for isolated plant work. These outfits are available for demonstration, also for laboratory experiments.

In addition to the regular laboratory equipment, there is available for testing purposes a fully equipped sub-station having a capacity of 75,000 watts supplied by the Rockingham County Light & Power Co., of Portsmouth, N. H. A part of this equipment consists of an automatic, polyphase, induction feeder voltage regulator, including contact-making voltmeter and reversing switch.

Farm Department.—New Hampshire College has a large, well-equipped farm. This farm serves as a laboratory for much of the instruction in agriculture where approved methods and practices may be seen and where the students may gain experience by actually performing the work with their own hands.

The college farm proper consists of about 385 acres of which about 100 are in forest and woodland; about 45 are occupied by the campus and athletic field; about 95 are tillage land, and about 145 are pasture land. A part of both the pasture and tillage land is utilized by the agronomy, horticulture, and animal husbandry departments of the experiment station. Small tracts of suitable land on adjoining farms are also rented for experimental purposes.

A farm of 120 acres adjacent to the college farm and having a complete set of buildings, has recently been purchased, primarily for the department of horticulture. This farm contains one of the best orchard sites in this part of the state, about 20 acres of forest and about 50 acres of pasture.

The farm buildings consist of a large dairy barn, a horse barn 36 x 68 with basement and hay storage loft, two sheep barns, and two general storage barns. The dairy barn has two 125-ton silos, storage capacity for about 120 tons of

hay, and a well-appointed, sanitary stable accommodating 40 cows and the usual complement of calves and yearlings. A building 20 x 60 with individual yards has been erected for housing the herd bulls.

Forestry.—The demand for instruction in forestry at the college has been increasing from year to year and the legislature of 1911 provided for a separate department of forestry. The course is intended to provide not only a special training in forestry, but also a broad general training in other lines of agriculture closely related to it. For those who desire to make forestry their life work, every encouragement and assistance will be given. Additional work at some graduate school of forestry is now almost a necessity, owing to the large number of men entering the profession.

Durham is well situated with reference to the study of woodlot forestry. All types of native second-growth forests are found nearby and the college owns a tract of 60 acres of old-growth timber where exceptional opportunities are given for the study of mature forests. There are other areas where practice will be given in establishing plantations of forest trees by various methods. A nursery for the growing of seedling forest trees has been established.

All the necessary instruments for making forest maps and measurements, together with collections of wood specimens, lantern slides and photographs, are available in connection with this work.

Home Economics.—The home economics department is located in two large rooms in Thompson Hall. The food laboratory is fitted with work desks, storage cupboards and apparatus for cooking. The desks are built in cabinet form to hold the necessary utensils and materials for each student. Each table is fitted with both gas and electric stoves and ovens.

The cooking utensils are of the materials best suited to the use of each. Standard measuring apparatus and scales are provided.

A storage cabinet is provided with bins for supplies and cupboard space for large utensils.

The sewing equipment consists of sewing machines, cabinets, tables, and dress-forms.

Various educational exhibits, both food and textile, are owned and used by the department for illustrative purposes.

The reference library of books, bulletins and journals is deposited partly in this room and partly in the main library.

Mechanical Engineering Department.—This department is located in DeMeritt Hall. On the second floor is the drafting room which is given over to advance drawing and designing. In addition to the drafting room there are two lecture rooms, and department offices. One of the lecture rooms is equipped with stereopticon lantern and screen, so that illustrated lectures may be given at any time.

In the basement is located the Mechanical Engineering Laboratory, the north end of which is given over to a materials' testing room, in which are tested all kinds of building materials, oil and fuel. The main room is given over to steam, gas and hydraulic testing. The equipment consists of three gasoline engines, two high speed steam engines, and one 25 H. P. Murray-Corliss. For hydraulic work there are various kinds of meters, weir tanks, and pumps. In addition to the laboratory equipment mentioned there is a supply of indicators, gages, thermometers and other small apparatus for testing and research work.

Military Department.—This department is in charge of an officer of the United States regular army, detailed by the War Department, as a professor of military science and tactics. Military instruction, which is required by law, is both theoretical and practical, the former having special reference to the duties of the line.

The organization is a regiment of two battalions, having a band, and officered by cadets selected for character, soldierly bearing, and efficiency. The federal government has furnished U. S. magazine rifles, model .30 caliber, 1917 (Enfield), and equipment. Attention is paid to rifle

practice, the government supplying ample ammunition and target materials, and the college a range within four minutes' walk of the college buildings, with firing points at 200 and 300 yards. The rolling country in the vicinity of the college furnishes opportunities for extended order drill and field exercises, the athletic field for close order drills, and the gymnasium for indoor work.

The cadets wear, when on duty of a military character, an olive drab cloth uniform as prescribed by standing orders of the War Department. This is furnished by the government.

Service in this department for juniors and seniors is limited to those men who are selected for further training by the President of the college and the Professor of Military Science and Tactics. Those so selected who agree to continue in the department for the remainder of their college course, and to pursue the subject in camp training prescribed by the War Department, receive from the government pay at the rate of the allowance for commutation of rations for the regular service.

Upon the graduation of each class the names of those students who have shown special aptitude for military service are reported to the adjutant-general of the army, and to the adjutant-general of the state, and they receive a special certificate for military proficiency.

Physics.—Besides the necessary furniture, the department is supplied with the usual small tools, calipers, scales, balances, weights, hydrometers, calorimeters, thermometers, etc., and with other apparatus for the performance in the laboratory of experiments in mechanics, heat, sound, light, magnetism and electricity.

The lecture room has a small but growing collection of apparatus for the illustration, both experimentally and with the projection lantern, of the laws of matter and energy in their various relations, and of the history of physics. There has recently been added to the lecture equipment a set of the well-known Evans P. E. D. equipment, which makes it

possible to illustrate most of the phenomena in electrodynamics which are treated in general physics.

Instruction is carried on by means of lectures with stencil outlines furnished to students and constantly kept up to the development of the subjects, recitations and discussions based on standard text-books, and experimental work in the laboratory. Stencil outlines are furnished for the laboratory experiments, with concise directions and references, and reports on the results of their experiments are written by the students for examination and criticism by the instructor.

The physics department occupies most of the west end of the engineering building. In the basement there are two small rooms for individual work, a switchboard room, a room for storage battery and for chemical work, a storage room, and a large laboratory room for work in subjects yet to be developed. On the first floor are the general laboratory, partly divided off into small rooms for work in light or for balances, a room for apparatus storage, the office and a recitation room. On the second floor are the lecture room and a room for the storage of lecture apparatus.

Poultry Husbandry.—The equipment of the poultry department consists of a permanent laying house, accommodating 750 hens, and eight colony houses used to brood chicks and also for housing 250 laying hens. The birds kept number 1,000 and consist of White Leghorns, White Wyandottes, Barred Rocks, and Rhode Island Reds. The plant is run on a strictly commercial basis and all the laboratory work of the various poultry courses is practical in every way, giving the student actual work in the various operations of a commercial poultry plant. There are 17 incubators of three standard makes, illustrating the differences in the various forms. There are also eight colony brooders of five different makes by means of which the student can see the operation of the various kinds.

Shopwork.—The wood shop is equipped with thirty-three benches and complete sets of tools for 160 students. Each bench is equipped with modern vises. Other equipment

consists of a universal pattern maker's saw, board-planer, buzz-planer, band saw, speed-lathes and a large pattern maker's lathe with boring attachment.

The equipment of the machine shop consists of engine lathes, speed-lathe, vertical drill, planer, large universal milling machine, plain milling machine, shaper, power hack saw, tool grinder, twelve benches with vises and bench lathes and a large number of small tools, including micrometers, calipers and gages necessary for accurate work.

In the forge shop are seventeen Sturtevant down-draft forges with anvils and necessary tools. The blast to the forges is furnished by a No. 4 blower, and the smoke is carried away by a 60-inch exhauster. These are driven by a small steam-engine.

All the shops are operated by 550-volt three-phase induction motors, suitably connected to line shafting, and driving the tools by the "group plan."

Zoölogy.—The college is favorably situated geographically for the study of zoölogy. Within a few minutes' walk of the laboratory, the Oyster river meets the tide water from Great Bay. This furnishes a graduation of salt, brackish and fresh water with an abundance of their characteristic fauna. Great Bay, the Piscataqua river and the open ocean are within easy access, and have their own peculiar, characteristic forms. On the other hand, there are numerous bodies of fresh water, with typical fresh water forms.

The department of zoölogy is prepared to offer courses in the following subjects: (A) systematic zoölogy; (B) physiology and sanitation; (C) philosophical zoölogy; (D) anatomical zoölogy.

The equipment for the work in systematic zoölogy consists of a well-lighted laboratory, provided with tables, charts, dissecting and compound microscopes. All of the latest books and periodicals on systematic zoölogy are at the student's disposal. The lecture room is fitted with a new reflectoscope capable of projecting opaque objects, text-

book figures or lantern slides. The room has a seating capacity of eighty, and is provided with tablet armed chairs which enable the students to readily take down notes and drawing. There is a fairly complete collection of local invertebrates, and a very good collection of the birds of New Hampshire. The work in systematic entomology is greatly aided by a large and complete collection of insects which is the property of the experiment station.

The proximity to both salt and fresh water renders the work in advanced systematic zoölogy unusually attractive. In addition to the regular collecting equipment, nets, aquaria, etc., advanced students also have the use of row-boats and a gasolene launch.

In the work in physiology, hygiene and sanitation, the department is provided with an unusually fine collection of injected preparations of the human body, and with numerous charts. The same laboratory and equipment is used in this work as noted above.

For work in evolution and experimental zoölogy the department has a very complete library. Studies in ecology in Great Bay and vicinity are encouraged, for which purpose the students have the use of a camera equipment. In addition to the study of evolution under natural conditions the department also furnishes aquaria for laboratory study and experiments.

The work in anatomical zoölogy is greatly facilitated by an abundance of fresh material which may be collected as needed. For the study of human and comparative anatomy a full set of skeletons and preserved material is provided. Students interested in histology have access to a private collection of some two thousand microscope slides.

Museum.—The museum had for a nucleus the collection made during the state geological survey. To this, additions have been made from various sources. Specimens are being collected to illustrate the zoölogy of New Hampshire, and New Hampshire collectors and naturalists are invited to make the museum the permanent depository of their collections.

GENERAL INFORMATION

COURSES

The college is a part of the public school system of the state, continuing the work of the high school, and it is open to both men and women. In accord with the origin and function of the college, its courses are essentially practical, leading directly to the student's preparation for a successful livelihood.

I. Agricultural Division.

a. Four-Year Courses.

1. Animal Husbandry and Dairying.
2. Forestry.
3. Horticulture.
4. Teacher-Training Course in Agriculture.

b. Two-Year Course in Agriculture.

c. Farmers' One-Week Course.

II. Arts and Science Division.

a. Four-Year Courses.

1. General Arts and Science.
2. Home Economics.
3. Mechanic Arts for Teachers.
4. Arts Course in Chemistry.

III. Engineering Division.

a. Four-Year Courses.

1. Chemical Engineering.
2. Electrical Engineering.
3. Mechanical Engineering.
4. Architectural, Electrical and Mechanical Construction.

EXPENSES

ESTIMATE OF FRESHMEN EXPENSES

	High	Average	Low
Tuition	$60.00	.....	.....
Fees	30.00	$30.00	$30.00
Books	20.00	18.00	16.00
Room	90.00	70.00	40.00
Table Board	210.00	175.00	120.00
Laundry	15.00	12.00	4.00
Uniform*	.....	.....	.....
Incidentals	50.00	20.00	10.00
Total	$475.00	$325.00	$220.00

Tuition and Fees.—Tuition is $60 a year; incidental fees are $30 a year. They are payable in advance in three equal installments, one on the first day of each term. A diploma fee of $5 is charged upon graduation. Charges will be assessed for extraordinary breakage or damage. No laboratory or course fees are charged. Payment of the incidental fees entitles the student to admission to all athletic games and contests.

Books.—Students may purchase at cost all books, drawing instruments, materials, etc., at the college bookstore in Thompson Hall.

Rooms.—The college has two dormitories for women and one for men. All rooms are heated, lighted and furnished. Bed linen, quilts and towels, however, are provided by the individual students. Each woman's dormitory is equipped with a laundry. In most cases, two students occupy a room or suite of rooms. Prices range from $60 to $84 a year for each student. Applications for rooms in the dormitories should be made directly to Mr. O. V. Henderson, business secretary of the college. Early application is necessary in order to secure a choice of rooms. Rooms in private families may be secured for about

*Uniform for members of the Reserve Officers' Training Corps is provided by the federal government.

Expenses for travel, clothing, etc., vary with the individual student.

the same prices as for those in dormitories. Less desirable, but comfortable, rooms may be obtained by men in several private dormitories at a somewhat less figure.

Women students, unless living at home, are required to room in one of the women's dormitories, or in approved houses.

Board.—The new Commons Building will provide boarding facilities commencing September, 1919. It is expected that its complete equipment will enable the college to offer substantial board at a minimum price.

COLLEGE AIDS TO STUDENTS

Scholarships.—Scholarships are awarded annually for the purpose of aiding deserving students. Recently, the large increase in student attendance has utilized to the full all scholarships thus far provided. However, the trustees are anxious to supply scholarships to all really needy young men and women in New Hampshire. In order to do this, they necessarily require full information of all applicants in order that the benefits may be awarded most equitably.

These scholarships will be forfeited at any time for misconduct, or for the use of intoxicating liquor or tobacco. They will also be withdrawn from students in all four-year courses who fail to secure an average grade of sixty in any one semester, and, only in cases of special financial necessity, will they be restored by the president.

Conant Scholarships.—There are twenty-seven Conant scholarships, each paying tuition, $60; fees, $30; cash, $10,—total, $100. These are assigned under the following conditions:

They are to be given to young men taking agricultural courses.

Each town in Cheshire County is entitled to one scholarship, and Jaffrey is entitled to two.

They will be reserved for their respective towns until August 1 of each year. Those not taken by students from

Cheshire County, and those in excess of the number of towns, will then be assigned to agricultural students from other parts of the state, and may be divided at the discretion of the president. These scholarships are assigned annually and are good for one year only.

Senatorial Scholarships.—There are twenty-four senatorial scholarships, one for each senatorial district. They are at the disposal of the senators from these districts. These scholarships are to be assigned each year and are good for one year only. Each one pays the tuition of $60. The method of appointment is entirely at the option of the senator concerned and may be by election, competitive examination, or otherwise. It is hoped, however, that preference will be given to needy applicants. These scholarships are open to students in all courses, but are restricted to residents of the state.

Grange Scholarships.—In order to equalize to some extent the distribution of scholarships throughout the state, a scholarship paying tuition of $60 has been placed at the disposal of each subordinate and Pomona Grange in New Hampshire, for the use of a four-year or two-year student. These scholarships are to be assigned each year and are good for one year only. The method of appointment is entirely at the option of the grange; it may be by election, competitive examination, or otherwise. It is hoped, however, that preference will be given to needy applicants. Holders of these scholarships need not be members of the grange, but must be resident within the state.

Valentine Smith Scholarships.—Through the generosity of the late Mr. Hamilton Smith of Durham, the sum of $10,000 has been given to establish the Valentine Smith scholarships.

"The income thus accruing to the college shall be given to the graduate of an approved high school or academy who shall, upon examination, be judged to have the most thorough preparation for admission."

These scholarships yield $100 annually and will be for-

feited if an average rank of 75 per cent. is not maintained for each term.

Competitive examinations for this scholarship will be held June 26 and 27 in Durham, Keene, Laconia, Lancaster, Manchester and West Lebanon. Contestants must present credentials fulfilling the requirements for entrance to the college and must pass examinations in English, American history, algebra through quadratics, plane geometry and either physics or chemistry.

Requests for examinations should be forwarded to the Dean of the College at least one week before the beginning of the examination period, and must state the names and addresses of the students, the places at which they will present themselves, and the examinations desired.

Examinations are not restricted to residents of the state.

State Scholarships.—By an annual scholarship appropriation of $3,000, the state provides free tuition for fifty New Hampshire students. These scholarships are awarded annually strictly on the basis of financial need, and are good for one year only. Applicants must furnish full information in relation to their own financial status and that of their parents.

Prizes.—*Bailey Prize.*—Dr. C. H. Bailey of Gardner, Mass., and E. A. Bailey, B.S., of Keene, N. H., offer a prize of ten dollars for proficiency in chemistry.

Erskine Mason Memorial Prize.—Mrs. Erskine Mason of Stamford, Conn., has invested one hundred dollars as a memorial to her son, a member of the class of 1893, the income of which is to be given, for the present, to that member of the senior class who has made the greatest improvement during his course.

Chase-Davis Memorial Medals.—In the spring of 1909 the Glee Club voted to present a gold and a silver medal yearly to the college in memory of Carl Chase, '09, of Webster, an enthusiastic member of the New Hampshire football team and the Glee Club, and of John Worthen Davis, '11, of Concord, who were drowned in Great Bay, December 7, 1908.

According to the terms of this gift, the gold medal is to be awarded to the senior who has won an "N. H." and stands highest in his studies, and the silver medal is to be awarded to the senior who has won an "N. H." and stands second in his studies. These medals are for excellence in athletic competition primarily, and the number of times a man wins an "N. H.," during his college career shall be of importance in making the award.

Chi Omega Prize.—The Chi Omega Sorority of New Hampshire College offers a prize of ten dollars for the best thesis on a sociological subject written by a woman student in Sociology 52, 54, or 58.

Lillian S. Edwards Prize.—A fund has been provided by Mrs. Lillian S. Edwards of Sanbornville for the publishing and distribution of the best thesis on a sociological subject written by a student for the Department of Sociology during the second term of the college year.

Self-Support.—Students obtain considerable financial aid by janitorships, by table work at boarding clubs, and by work on the farm and in the greenhouse. They also find employment with the power and service department of the college and with the experiment station. However, so much depends upon the individuality of the student that the college can guarantee nothing in any particular case, but is glad to assist by informing students of opportunities for work.

STUDENT REGULATIONS

The following are a few of the student regulations that should be carefully noted. Students are held accountable for all student regulations.

Physical Examination.—A physical examination must be passed by all students before registration.

Registration.—Undergraduate students are required to register before 4 p. m. of the first day of each term. Those desiring to register by mail or in person preceding registration day, should write the registrar for registration

blanks, which, when filled out, should be forwarded to the business secretary, together with the student's remittance for his term's tuition, and fees.

Any former student who registers after the first day of a term will be charged for such registration a fine of one dollar for the first day and fifty cents additional for each succeeding day, to be remitted only by the president upon presentation by the student of a substantial excuse for delay.

Election of Studies.—Every student shall, on or before the Saturday before the last in each term, notify the registrar, in writing, of his election for the term following. Any student who fails to fill out his elective slip on or before the date mentioned shall pay a fine of one dollar before he can be registered for the studies of the next term, unless he has previously obtained from the president a written excuse for delay.

Every student is responsible for all work assigned him on his registration card, and no credit will be given for any subject unless the student is registered for the same.

Changes in Schedule.—A student may add or drop an elective subject only upon the approval of his faculty adviser during the period intervening between the day he registers and 6 p. m. of the fifth day following. A student, in making changes in his elective slip shall have them approved (on a "drop and add card") by his faculty adviser, and said card must be filed with the registrar. After the fifth day following his registration, no changes can be made by a student without the consent of his division committee.

Substitutions.—A substitution for a required subject may be permitted only for special reasons, and then only upon consideration by the department concerned and the proper division committee, and with the approval of the faculty.

Convocation.—Every student is expected to attend Convocation and all class exercises in the subjects for which he is registered and will be held responsible for all the work given in these subjects.

Vacations.—A student absent from a class exercise immediately preceding or following a scheduled holiday or vacaton period shall be subject to a fine of $5 unless permission for the absence has been previously granted by the proper division committee.

Warnings.—Any student who receives official warning that he is below sixty in one or more subjects which represents more than seven credit hours per week or who has accumulated deficiencies in more than eight credit hours shall not participate in class or college athletic contests, be manager of any team or represent the college in any other public capacity. A warning in a subject shall hold until the mark for that subject is in the hands of the registrar.

Grades.—Sixty is the passing grade of the college. Any mark below sixty shall be called a "deficiency." "Deferred" denotes that work is incomplete on account of illness or on account of an excuse which has received the approval of the faculty, and that it will be graded later. Every condition and every deferred mark shall lapse into a failure if it is not made up before the end of the following term.

METHODS OF ADMISSION

New Hampshire College will admit without examination all candidates for admission who are graduates of high schools or academies of New Hampshire that are approved by the State Department of Public Instruction, provided the division entrance requirements of the college are met.

Graduates of schools specially approved by the college will be admitted on the same terms as graduates of approved schools in New Hampshire.

Graduates of other high schools and academies will be admitted on passing examinations in fifteen units. However, the college can not agree to give examinations in certain vocational subjects involving mainly practical work. Instead, it may require special certification in such subjects.

Cases not covered by the above statements will be decided by the entrance committee of the faculty.

Candidates for advanced standing are admitted on the basis of the work completed at the institutions from which they come.

DIVISION UNIT REQUIREMENTS

There are three divisions of New Hampshire College; the Agricultural, the Arts and Science, and the Engineering. These divisions are defined and described elsewhere in this announcement.

An entrance unit represents one study of four or five recitations a week for one year. It is assumed that two hours of manual training or laboratory work are equivalent to one hour of classroom work.

Candidates for admission to the freshman class of the various divisions of the college must show evidence, either by credentials or by examination, that they are prepared in fifteen units as indicated in the following table:—

Required Units		Agricultural Division.	Arts and Science Division.	Engineering Division.
Group A	English,	3	3	3
**Group B*	Mathematics,	2	2	3
Group C	Social Science and History,	1	1	1
Group D	Natural Science,	1	1	1
		7	7	8
Elective Units		8	8	7
Total for admission,		15	15	15

Group E Foreign languages, ancient or modern.
Group F Vocational subjects: agriculture, commercial subjects, domestic arts, mechanic arts.
Elective units may be offered from groups A, B, C, D, E. and F.

The credentials to be rendered by principals must state the time of graduation, the subjects studied, the number of entrance units in each, the grades attained by the student and the passing grade of the school.

The credential forms to be used will be furnished by the college on application to the registrar.

Entrance by Examination.—Examinations will be given at the college at the time of opening in September. They will also be given in connection with the Valentine Smith examinations in June. Requests for these examinations should be forwarded to the Dean of the College at least one week in advance.

*A candidate for admission to the Arts and Science Division of New Hampshire College who offers two units in a foreign language may substitute for the two units required in Mathametics two additional units in subjects named in groups C, D and E above.

Candidates for admission to the Construction Courses of the Engineering Division may be admitted with two units of mathematics, provided a total of 15 units is offered.

ENTRANCE REQUIREMENTS

GROUP A. ENGLISH

The examination paper in English will be based upon the principle that the way to learn to write is to read.

All candidates will therefore be required to write a series of short themes which will show an adequate knowledge and thorough appreciation of certain great English classics as literature—as "the life blood of the mind." The classics selected are as follows: Shakespeare's Merchant of Venice, Henry V, and Macbeth; one novel each by Scott, Dickens, George Eliot, Stevenson, Cooper and Hawthorne; one essay each by Macaulay, Ruskin and Lowell; the subject-matter and nature of the poetry of Wordsworth, Byron, Tennyson, Longfellow and Whittier.

As a special test in spelling, grammar, punctuation and paragraphing, the candidate will be required to write a short theme upon some subject pertaining to the home or school life of the average high school senior.

An optional question will be offered for the purpose of discovering the candidate's familiarity with the best modern periodical literature.

GROUP B. MATHEMATICS

1. **Elementary Algebra.**—The four fundamental operations for rational algebraic expressions. Factoring, determination of highest common factor and least common multiple by factoring. Fractions, including complex fractions, and ratio and proportion. Linear and quadratic equations, both numerical and literal. Problems depending on linear and quadratic equations. Radicals, including the extraction of the square root of polynomials and of numbers. Exponents, including the fractional and negative.

2. **Advanced Algebra.**—The formula for the nth term and the sum of the terms of arithmetical and geometrical progressions, with applications. The theory and use of logarithms, without involving the use of infinite series. The binomial theorem for positive integral exponents.

Complex numbers, with graphical representation of sums and differences. Determinants limited to simple cases. The elements of the theory of equations.

3. **Plane Geometry.**—The usual theorems and constructions of good text books, including the general properties of plane rectilineal figures; the circle and measurement of angles; similar polygons; areas; regular polygons, and the measurement of the circle. The solution of numerous original exercises, including loci problems. Applications to the measurement of lines and plane surfaces.

4. **Solid Geometry.**—The usual theorems and constructions of good text books, including the relations of lines and planes in space; the properties and measurement of prisms, pyramids, cylinders and cones; the sphere and the spherical triangle. The solution of numerous original exercises, including loci problems. Applications to the measurement of surfaces and solids.

5. **Plane Trigonometry.**—The subject-matter of plane trigonometry as presented in good text books, including the solution and use of trigonometric equations of a simple character, the use of logarithms, the solution of right and oblique triangles, and practical applications.

6. **Review Mathematics.**—A general mathematics review during half of senior year is recommended, especially for students preparing for college engineering courses. A certificate covering the work of not more than one unit will be accepted for entrance. No examinations will be given.

GROUP C. SOCIAL SCIENCE AND HISTORY

This group includes history, political economy, and commercial law.

Although there are excellent text books in history, an adequate preparation cannot be obtained by textbook work alone. Some collateral work is necessary, whatever textbook is used, and with certain text books a large amount is necessary. The details of the preparatory work in history are

fully stated in "A History Syllabus for Secondary Schools," by the New England History Teachers' Association. Boston, D. C. Heath & Co., 1904. Details are also stated in "Standard Program for the Secondary Schools of New Hampshire, Department of Public Instruction, Concord, N. H."

1. **Ancient History.**—This may include the earliest nations and the period to 800 A. D., or it may be limited to Grecian History and Roman History to the fall of the Western Roman Empire.

2. **Mediaeval and Modern History.**

3. **English History.**

4. **American History and Civics.**—The work may conform to the course in American constitutional history described in the "Standard Program" or to the course in American history developed in nearly a hundred pages of the "Syllabus." It is assumed that in any case a reasonable amount of time is to be given to the study of the Constitution of the United States.

5. **Political Economy.**—(1) The study of a standard text. (2) At least six topics investigated by outside reading.

6. **Commercial Law.**—(1) Study of a standard text. (2) The study of a total of not less than thirty-six specific cases.

GROUP D. NATURAL SCIENCE

A notebook, carefully kept and examined by the teacher, is an essential part of all laboratory work in science.

1. **Botany.**—The work in botany should consist of (1) the study of a standard text; (2) four or five exercises per week, at least one of which should be laboratory work. Either a half or the whole of a year's work will be accepted.

2. **Chemistry.**—Elementary inorganic chemistry; should cover the more common nonmetallic and metallic elements with their most important compounds, together with an introduction to the general theoretical principles; calcula-

tions based upon changes of gaseous volumes and chemical equations. A year's work should consist of four or five exercises per week, at least one of which should be laboratory work.

3. **Physics.**—The standard work in physics should consist of (1) the study of a standard text; (2) not less than forty experiments worked out in the laboratory by each student and properly recorded in a suitable notebook.

4. **Zoölogy.**—A study of the fundamental principles of animal structure and the dissection of type forms. The student should become familiar with the characteristics of the various phyla of the animal kingdom. The study should consist of four or five exercises a week, at least one of which should be laboratory work. Either a half or the whole of a year's work will be accepted.

5. **General Science.**—To meet a recent movement in the disposition of the science work in the high schools, a course in general science which amounts to at least four exercises a week for one year will be accepted. Such a course may include something of the biologic and earth sciences, the sciences employed in household economy, and the more common phenomena of physics and chemistry.

GROUP E. FOREIGN LANGUAGES

1. **French.**—Work of the first year should include (1) careful drill in pronunciation, (2) drill upon the rudiments of grammar, (3) abundant translation of simple English prose into idiomatic French, (4) reading of from 100 to 175 pages of French prose, (5) writing French from dictation. Work of the second year should include (1) the reading of from 250 to 400 pages of easy modern prose, (2) constant practice in translating from English into French variations of the text read, (3) frequent paraphrases of the text read, (4) dictation.

2. **German.**—Work of the first year should include (1) careful drill in pronunciation, (2) drill upon the rudiments

of grammar, such as the inflection of the articles, the common nouns, adjectives, pronouns and strong and weak verbs; upon the uses of the prepositions, the modal auxiliaries, and the rules of syntax and word order, (3) writing from dictation, (4) the reading of from 75 to 100 pages of prose, (5) translation from English into German. Work of the second year should include (1) the reading of from 150 to 200 pages of prose, (2) constant practice in translating from English into German variations of the text read, (3) dictation, (4) continued drill upon the rudiments of grammar, (5) frequent paraphrases of the text read.

3. **Latin, Elementary.**—Grammar and four books of Caesar. Two years' work.

4. **Latin, Advanced.**—Virgil, six books. Cicero, six orations.

GROUP F. VOCATIONAL SUBJECTS

1. Agriculture

Agronomy.—A textbook or lecture and recitation subject upon the formation, classification, composition, physical properties and tillage of soils; the kinds, use, value, and function of different chemical fertilizers; the use, composition, and preservation of farm manures; the planting, cultivating, harvesting, use, and marketing of the different kinds of field crops. The textbook and lecture work should be supplemented by field and laboratory exercises. Four or five periods per week for one year.

Animal Husbandry and Dairying.—A textbook and recitation subject upon the types and breeds of horses, cattle, sheep, swine, and poultry with practical exercises in stock judging; a study of the principles of feeding, the classification of animal foods, with practice in computing and mixing rations. Also a subject upon the composition, properties, care and handling of milk, with practical exercises in testing milk, cream, and butter with the Babcock test. Four or five exercises per week for one year.

Horticulture.—A textbook or lecture and recitation sub-

ject upon the classes and varieties of fruits; the location and fertilization of orchards; the pruning, grafting, and spraying of fruit trees, with some study of fungous and insect pests. Practical exercises in picking, packing, and marketing of fruit. Also a study in vegetable growing, in which each student learns the classes, varieties, uses, and adaptations of our most important vegetables. Practical gardening work in growing vegetables. Four or five exercises per week for one year.

Rural Economics and Farm Management.—A textbook, lecture and recitation subject upon the economic relations of land, labor, and capital. A detailed study of the cost of producing and marketing farm and garden crops. Also a study of the business end of farming, buying and selling methods, types of farming, systems of rotation, the keeping of farm accounts, and the making of inventories. Four exercises per week for one year.

2. **Commercial Subjects.**—Bookkeeping, commercial arithmetic, commercial geography, stenography, and typewriting.

3. **Domestic Arts.**—Foods and cookery, dressmaking, household sanitation and mechanical appliances, household economics, household design and decoration.

4. **Mechanic Arts.**—Casting, drawing, forging, machine work, molding, pattern-making, woodwork.

SPECIAL COURSES

Persons of mature years presenting satisfactory evidence of their ability to complete any desired course of study may be admitted by vote of the faculty as special students.

REQUIREMENTS FOR DEGREES

ADVANCED DEGREES

Advanced degrees may be conferred upon candidates who have received the degree of B.S. from this college or from any institution of like standing upon the fulfilment of the following requirements:

Degree of M.S.—The successful completion of a course of graduate study pursued in residence and approved by the faculty of the college.

The preparation of an original thesis satisfactory to the faculty of the college.

Degree of M.E.—Professional experience of at least four years.

The successful completion of a course of graduate study approved by the Engineering Division Committee.

The preparation of an original thesis satisfactory to the faculty of the college upon some subject approved by the Engineering Division Committee.

For details concerning the regulations governing the conferring of degrees address Dean C. H. Pettee.

UNDERGRADUATE DEGREES

The college confers two undergraduate degrees: Bachelor of Science and Bachelor of Arts.

The degree of Bachelor of Science is conferred upon students graduating from the Agricultural Division, from the Engineering Division, and upon students graduating from the Arts and Science Division who have elected the Home Economics Course, the Arts Course in Chemistry, the Mechanic Arts Course for teachers, or who have majored in groups 2 or 3 of the General Arts and Science Course. The degree of Bachelor of Arts is conferred upon students graduating from the General Arts and Science Course who have majored in group 1.

Agricultural Division

The completion of 216 term hours.

The completion of the studies required in one of the following courses:

(a) Animal Husbandry and Dairy Husbandry.
(b) Forestry.
(c) Horticulture.
(d) Teacher Training Course in Agriculture.

Students graduating from the four-year courses in agriculture must present to the dean of the division on or before the second Tuesday preceding commencement satisfactory evidence of having had practical experience in farm work, either through having lived on a farm for at least two years subsequent to the age of 12, or through having worked on a farm for at least six months subsequent to the age of 16.

Students graduating from the Forestry Course must have spent at least three months in practical forest work, which time will be counted as a part of the six months' requirement.

Arts and Science Division

(a) General Arts and Science

1. The completion of 204 term hours, of which a minimum of 18 shall be required each term of the freshman and sophomore years, and a minimum of 16 hours each term thereafter.

2. The completion of English 1–a, 2–b, 3–c.

3. The completion of the military and physical culture requirements or their equivalent.

4. The completion of major and minor requirements as follows.

The Arts and Science courses are divided into three groups:

Group I.—Language, Literature and History: English, French, German, Latin, Spanish, History.

Group II.—Mathematics and Natural Science: Agricultural subjects,* Botany, Chemistry, Drawing, Geology, Home Economics, Mathematics, Meteorology, Physics, Zoölogy.

Group III.—Social Science: Economics, Education, Political Science, Psychology, Sociology.

Group Requirements

Each Arts and Science student shall elect at least 27 term hours in each of the above three groups.

Major Requirements

Each Arts and Science student shall, at the beginning of the third term of his second year, select a department to be known as his major department.

In this major department he shall complete 27 term hours in which he shall make a grade of 70 or better.

In case of departments in which less work is offered than the amount required for the major, the shortage may be made up from such other related departments as the head of his major department may prescribe.

Minor Requirements

Each student shall, with the approval of the head of his major department, elect, for a minor, 27 term hours of subjects related to his major.

Student Advisers

1. For Freshmen and First and Second Term Sophomores:

A committee of faculty members shall be appointed by the dean of the Arts and Science Division to act as advisers for freshmen and first and second term sophomores, and the elective slip of each student must be approved by a member of this committee.

2. For Third Term Sophomores, and for Juniors, and Seniors:

* Agricultural subjects as part of minor only.

A student shall have for his adviser the head of his major department; provided, that in case a student majors in a department outside the Arts and Science Division, his elective slip shall also be approved by the dean of the Arts and Science Division.

(b) Home Economics

The completion of 204 term hours.

The completion of the subjects required in the Home Economics branch.

(c) Mechanic Arts for Teachers

The completion of 216 term hours.

The completion of the subjects required in the Mechanic Arts Course for Teachers.

Students desiring to be accredited to teach industrial education in Smith-Hughes schools should take the regular work as prescribed in the Mechanic Arts Course for Teachers, except that the required work of the third term of the senior year should be taken during the third term of the junior year. Also, the student should work in the shops during two summers of his college career.

(d) Arts Course in Chemistry

The completion of 207 term hours.

The completion of the subjects required in the Arts Course in Chemistry.

Engineering Division

The completion of 216 term hours.

The completion of the studies in one of the following branches:

(a) Chemical Engineering.
(b) Electrical Engineering.
(c) Mechanical Engineering.
(d) Architectural, Electrical and Mechanical Construction Courses.

THESES

The preparation of a thesis upon some subject connected with the work of the division may be required by the division committee of candidates for a degree.

The subject of a thesis, together with a written approval by the head of the department concerned, must be filed with the registrar within one week of the opening of the second term. The thesis is to be submitted to the head of the department not later than the second Tuesday preceding commencement day.

It is to be typewritten or printed upon standard thesis paper, eight and one-half by eleven inches, medium weight, and must be neatly bound in black cloth and gilt-lettered on the first cover with title, name of author, degree sought, and year of graduation. This bound copy is to be filed and left with the college librarian before commencement day.

FOUR-YEAR COURSES

AGRICULTURAL DIVISION

FREDERICK W. TAYLOR, *Dean*

The courses of this division are designed for the general education and scientific training of students in the various economic branches of agriculture. The lecture and recitation work of the classroom is supplemented largely by practical exercises in the laboratories. Seminar studies are also given, especially for seniors and advanced students. During junior and senior years students may elect certain courses of study which will enable them to specialize in animal husbandry, dairy-husbandry, horticulture, or forestry. They may also specialize in preparation for teaching agriculture.

While the two-year course is intended to give the student as thorough training in the science and practical details of farm operations as the time will allow, it does not give that opportunity for a broad general foundation of pure and applied science which the four-year courses afford; the latter courses aim primarily to combine a college education with that of a technical vocation. Many of the graduates of the four-year courses return to the farm for the purpose of putting into practice the knowledge and training of their college work, and many of them are becoming successful and prosperous citizens of the community; others who have no farms of their own accept salaried positions as superintendents or foremen on the dairy, fruit or truck farms of large owners; still others take positions as teachers of science and agriculture in our secondary schools or as assistants in our agricultural colleges and experiment stations.

The Agricultural Division offers the following four-year courses of study:

Animal Husbandry and Dairy Husbandry Course.—This course is designed for those students who wish to specialize

either in animal husbandry or dairy husbandry. Election of subjects between these two departments may be made throughout the junior and senior years. The dairy building with its complete modern equipment, and the additional subjects and increased facilities for instruction in the animal husbandry department, make this course especially attractive.

Forestry Course.—The forestry course offers to students who have entered the agricultural division an opportunity to specialize in forestry during the junior and senior years. This arrangement allows the student to devote a large amount of time to the various branches of forestry, but at the same time requires a foundation in agriculture and in the sciences upon which agriculture is based. The college forest of sixty acres of old-growth pine and hemlock, and other areas of natural and planted growth, furnish the laboratory for the forestry student. Ample opportunity is given to study the various forest problems on the ground as well as in the classroom.

Horticultural Course.—This course is designed for those students who contemplate making a specialty of some branch of horticultural work. Several advanced subjects in botany will be required, but during the senior year opportunity will be given to elect subjects in other departments. The horticultural department is well equipped with gardens, orchards, greenhouses and laboratories for the study of the different phases of this industry, especially fruit growing, which is so prominent in the agriculture of the state.

Teacher Training Course in Agriculture.—Under the provisions of the Smith-Hughes act New Hampshire College has been designated as the institution in this state for the training of teachers of agriculture. The course of study provided for this purpose requires that at least 40 per cent of the work consist of technical agricultural subjects, 20 per cent of subjects in related sciences, and 10 per cent of educational subjects, including special methods and four to six weeks of practice teaching in secondary schools. Stu-

dents who have completed the prescribed course of study will be accredited as qualifying under the Smith-Hughes act, provided that in addition they have had:

(a) farm up-bringing prior to such course, or

(b) two years' agricultural experience, one of which is in a recognized agricultural enterprise on a commercial scale.

The rapidly increasing demand for teachers of agriculture in our secondary schools has indicated the necessity of training men especially for this important line of work, and the teacher training course is designed to meet the need.

AGRICULTURE

ALL COURSES

	Fall Term ("A")	Winter Term ("B")	Spring Term ("C")
Freshman Year			
English Composition (Eng. 1–a, 2–b, 3–c)	3	3	3
Breeds of Live Stock (A. H. 1–a)	4		
Survey of Agriculture (Agric. 1–b)		1	
General Botany (Bot. 1–a, 2–b, 3–c)	3	3	3
Inorganic Chemistry (Chem. 1–a, 2–b, 3–c)	3	3	3
Qualitative Analysis (Chem. 5–c)			3
General Zoölogy (Zoöl. 30–a, 31–b)	3	3	
Systematic Zoölogy (Zoöl. 32–c)			3
Trigonometry (Math. 21–b)		3	
Military Art (M. A. 1–a, 2–b, 3–c)	1½	1½	1½
Physical Education	½	½	½
	18	18	17
Sophomore Year			
Farm Dairying (D. H. 1–b)		4	
Farm Poultry (P. H. 1–b,* 2–c)		3	3
Vegetable Gardening (Hort. 1–c)			3
Practical Pomology (Hort. 3–c)			3
Economic Entomology (Ento. 1–a)	4		
Principles of Forestry (For. 1–a)	4		
Agricultural Engineering (Agron. 1–a)	4		
Quantitative Analysis (Chem. 13–a, 14–b)	2	2	
Physics (Phys. 1–a, 2–b)	3	3	
Agricultural Drawing (Draw. 10–c)			3
Forging (Shop 4–b)		3	
Woodwork (Shop 20–c)			2
Military Art (M. A. 4–a, 5–b, 6–c)	1½	1½	1½
Physical Education	½	½	½
Elective			3
	19	17	19

* Elective for students intending to take Forestry course.

ANIMAL HUSBANDRY AND DAIRY HUSBANDRY COURSE

Junior Year

	Fall Term ("A")	Winter Term ("B")	Spring Term ("C")
Field Crops (Agron. 2–a, 3–b)	3	3	
Soils (Agron. 4–c)			4
Anatomy (A. H. 4–a) *or* *Milk Production* (D. H. 3–a)	4		
Infectious Diseases (A. H. 5–b) *or* *Ice Cream and Cheesemaking* (D. H. 6–b)		4	
Non-Infectious Diseases (A. H. 6–c) *or* *Butter Making* (D. A. 7–c)			4
Feeds and Feeding (A. H. 3–c)			4
Market Milk (D. H. 5–b)		4	
Bacteriology (Bot. 9–a, 10–b, 11–c)	3	3	3
Elementary Geology (Geol. 1–a)	4		
Elective	4	4	3
	18	18	18

Senior Year

Farm Management (Agron. 8–a)	4		
Fertilizers (Agron. 5–b)		3	
Soil Fertilization (Agron. 6–c)			3
Animal Breeding (A. H. 7–a)	4		
Elementary Economics (Econ. 1–a, 2–b)	3	3	
Agricultural Economics (Econ. 8–c)			3
Meteorology (Met. 1–b)		3	
Elective	7	9	12
	18	18	18

FORESTRY COURSE

Junior Year

Soils (Agron. 4–c)			4
Landscape Gardening (Hort. 7–c)			4
Plant Histology (Bot. 6–a, 7–b)	2	2	
Bacteriology (Bot. 8–a)	3		
Plant Physiology (Bot. 4–b, 5–c)		3	3
Dendrology (For. 2–a)	4		
Silviculture (For. 3–a, 4–b, 5–c)	3	3	3
Forest Mensuration (For. 6–b)		4	
Elementary Geology (Geol. 1–a)	4		
Elective	2	6	4
	18	18	18

FOUR-YEAR COURSES

Senior Year

	Fall Term ("A")	Winter Term ("B")	Spring Term ("C")
Plant Pathology (Bot. 12–a, 13–b)	3	2	
Forest Protection (For. 9–a)	3		
Forest Management (For. 7–b, 8–c)		3	3
Forest Practice (For. 14–b)		4	
Forest Utilization (For. 13–a)	3		
Meteorology (Met. 1–b)		3	
Surveying (Math. 22–a)	3		
Elementary Economics (Econ. 1–a, 2–b)	3	3	
Agricultural Economics (Econ. 8–c)			3
Elective	3	3	12
	18	18	18

HORTICULTURAL COURSE

Junior Year

Greenhouse Management (Hort. 2–a)	3		
Small Fruits (Hort. 4–b)		3	
Landscape Gardening (Hort. 7–c)			4
Nursery Management (Hort. 8–c)			4
Floriculture (Hort. 9–b)		3	
Vegetable Forcing (Hort. 11–b)		3	
Bacteriology (Bot. 8–a)	3		
Plant Physiology (Bot. 4–b, 5–c)		3	3
Field Crops (Agron. 2–a, 3–b)	3	3	
Soils (Agron. 4–c)			4
Elementary Geology (Geol. 1–a)	4		
Elective	5	3	3
	18	18	18

Senior Year

Systematic Pomology (Hort. 5–a, 6–b)	3	3	
Evol. and Improv. of Plants (Hort. 10–c)			3
Horticultural Seminar (Hort. 12–c)			1
Plant Pathology (Bot. 12–a, 13–b)	3	2	
Farm Management (Agron. 8–a)	4		
Fertilizers (Agron. 5–b)		3	
Soil Fertilization (Agron. 6–c)			3
Elementary Economics (Econ. 1–a, 2–b)	3	3	
Agricultural Economics (Econ. 8–c)			3
Surveying (Math. 22–a)	3		
Meteorology (Met. 1–b)		3	
Elective	2	4	8
	18	18	18

TEACHER TRAINING COURSE

Junior Year

	Fall Term ("A")	Winter Term ("B")	Spring Term ("C")
Field Crops (Agron. 2–a, 3–b)	3	3	
Soils (Agron. 4–c)			4
Farm Accounting (Agron. 7–c)			3
Anatomy (A. H. 4–a) *or* *Milk Production* (D. H. 2–a)	4		
Infectious Diseases (A. H. 5–b) *or* *Butter Making* (D. H. 3–b)		4	
Feeds and Feeding (A. H. 3–c)			4
Market Milk (D. H. 4–b)		4	
Poultry (P. H. 6–b)		3	
Incubation and Breeding (P. H. 7–c)			3
Bacteriology (Bot. 8–a)	3		
Elementary Geology (Geol. 1–a)	4		
Secondary Education (Educ. 10–b, 11–c)		2	3
General Psychology (Psych. 10–a)	3		
Elective	2	2	2
	19	18	19

Senior Year

Methods of Teaching (Agric. 2–a)	3		
Breeding (A. H. 7–a)	4		
Farm Management (Agron. 8–a)	4		
Fertilizers (Agron. 5–b)		3	
Elementary Economics (Econ. 1–a, 2–b)	3	3	
Vocational Education (Educ. 20–a)	3		
School Hygiene (Educ. 28–c)			3
Adolescent Psychology (Psych. 24–b)		3	
Meteorology (Met. 1–b)		3	
Practice Teaching (Agric. 4–c)			12
Elective	2	6	
	19	18	15

ARTS AND SCIENCE DIVISION

ERNEST R. GROVES, *Dean*

In the Arts and Science Division the following courses are offered:

General Arts and Science Course.—This course provides a general college training which especially prepares for secondary school teaching, business or graduate study. By means of the group system of elective studies an opportunity is given the student to specialize in zoölogy, botany, chemistry, physics, drawing, agriculture, mathematics, modern languages, English, psychology, sociology, political science, economics, history, home economics, and education.

Home Economics Course.—The course in home economics furnishes instruction in the branches that especially serve the need of women students. The work is planned to meet the demands of the day for scientific training in home making, to fit students to enter fields of professional activity in educational and institutional lines of work, and to provide thorough training for those students who wish to elect home economics as either a major or a minor subject in the Arts and Science Course.

The technical work in household science is based upon the principles of physical, biological and social sciences. The subjects in foods, nutrition and dietetics require physics, chemistry and physiology; those in sanitation necessitate a knowledge of chemistry and bacteriology; home administration and the care and education of children demands a knowledge of the principles of human nutrition and dietetics, and of the principles of economics, psychology and sociology. The training in drawing, color, and design which is gained in the department of drawing is related to the work in costume design and house decoration.

Beginning with 1919–20 there will be offered four types of home economics courses:

(1) Teacher Training Course. This is to train students for meeting state requirements for teaching in the Smith-Hughes high schools.

(2) Instructional Course. This is to train students for positions as managers and assistants in public institutions, such as college dormitories, hospitals, tea rooms, cafeterias, etc.

(3) Dietitians Course. This course is to train students for the dietary work in hospitals or in the feeding of other institutional groups.

(4) A General Course. For those not majoring in Home Economics there are several elections offered in addition to subjects in the other three courses which may be elected.

Mechanic Arts Course for Teachers.—This course provides an opportunity for preparation for the teaching of mechanic arts and manual courses in secondary schools and institutions. It was designed to meet the increasing demand for graduates of the college qualified to teach manual and mechanic arts courses. Although much of the work of this course is necessarily prescribed in such subjects as drawing, mathematics, shop work, English, psychology and education, a reasonable opportunity is given the student to elect other subjects in the Arts and Science Division. At the present time the demand for graduates from this course for secondary teaching is greater than the college can satisfy.

The Arts Course in Chemistry.—This is a general course in chemistry, less technical in character than the chemical engineering course. It prepares for certain kinds of commercial chemistry, secondary science teaching, and affords a splendid basis for graduate work in medical schools. The considerable amount of electives permits the student to choose work in education if professional preparation for teaching is desired.

ARTS AND SCIENCE DIVISION

GENERAL ARTS AND SCIENCE COURSE

Freshman Year

	Fall Term ("A")	Winter Term ("B")	Spring Term ("C")
English Composition (Eng. 1–a, 2–b, 3–c)	3	3	3
**Military Art* (M. A. 1–a, 2–b, 3–c)	1½	1½	1½
**Physical Education* (50–a, 51–b, 52–c)	½	½	½
Electives	13	13	13
	18	18	18

Sophomore Year

†*Military Art* (M. A. 5–a, 6–b, 7–c)	1½	1½	1½
†*Physical Education* (53–a, 54–b, 55–c)	½	½	½
Electives	15	15	15
	17	17	17

Junior Year

Electives	17	17	17

Senior Year

Electives	16	16	16

* Physical Education 1–a, 2–b and 3–c, giving 1 credit, are required of women students instead of Military Art and Physical Education 50–a, 51–b and 52–c.

† Physical Education 4–a, 5–b, and 6–c, giving 1 credit, are required of women students instead of Military Art and Physical Education 53–a, 54–b, 55–c.

HOME ECONOMICS

Dietitian's Course

Freshman Year

	Fall Term ("A")	Winter Term ("B")	Spring Term ("C")
English Composition (Eng. 1–a, 2–b, 3–c)	3	3	3
Inorganic Chemistry (Chem. 6–a, 7–b, 8–c)	3	3	3
**Physics* (Phys. 4–a, 5–b)	3	3	
Drawing (Draw. 20–a, 21–b, 22–c)	2	2	2
Home Economics Textiles (H. E. 3–c)			3
†*French or German*	3	3	3
Personal Hygiene (Phys. Ed. 13–a)	2		
Physical Education (Phys. Ed. 1–a, 2–b, 3–c)	1	1	1
Electives	2	2	3
	19	17	18

Sophomore Year

Foods and Principles of Cooking (H. E. 4–a, 5–b, 6–c)	4	4	4
Physiology (Zoöl. 33–a, 34–b)	3	3	
Hygiene and Sanitation (Zoöl. 35–c)			3
Organic Chemistry (Chem. 15–a, 16–b)	2	2	
Drawing (Draw. 23–a, 24–b, 25–c)	2	2	2
†*French or German*	3	3	3
Physical Education (Phys. Ed. 4–a, 5–b, 6–c)	1	1	1
Electives	3	3	5
	18	18	18

Junior Year

Bacteriology (Bot. 8–a)	3		
Household Chemistry (Chem. 23–a)	3		
Household Physics (Phys. 12–a)	3		
Elementary Economics (Econ. 1–a, 2–b)	3	3	
Physiological Chemistry (H. E. 14–b)		3	
Nutrition and Dietetics (H. E. 15–b, 16–c)		3	3
Advanced Cooking (H. E. 13–b)		3	
House Management (H. E. 20–c)			3
House Decoration (H. E. 19–c)			2
Physical Education (Phys. Ed. 7–a, 8–b, 9–c)	1	1	1
Electives	5	5	9
	18	18	18

Senior Year

Institutional Management (H. E. 24–a)	4		
Industrial Management (H. E. 25–b)		4	
Institutional Practice (H. E. 26–c)			12
Electives	11	11	
	15	15	12

* Not required of those students who offer Physics for entrance credit.

† Two years of either French or German. One year of each cannot be substituted.

Institutional Course

Freshman Year

	Fall Term ("A")	Winter Term ("B")	Spring Term ("C")
English Composition (Eng. 1–a, 2–b, 3–c)	3	3	3
Inorganic Chemistry (Chem. 6–a, 7–b, 8–c)	3	3	3
**Physics* (Phys. 4–a, 5–b)	3	3	
Home Economics (H. E. 3–c)			3
Drawing (Draw. 20–a, 21–b, 22–c)	2	2	2
Physical Education (Phys. Ed. 1–a, 2–b, 3–c)	1	1	1
Personal Hygiene (Phys. Ed. 13–a)	2		
Electives	4	6	6
	18	18	18

Sophomore Year

English	2 or 3	2 or3	2 or 3
Physiology (Zoöl. 33–a, 34–b)	3	3	
Hygiene and Sanitation (Zoöl. 35–c)			3
Organic Chemistry (Chem. 15–a, 16–b)	2	2	
Foods and Principles of Cooking (H. E. 4–a, 5–b, 6–c)	4	4	4
Drawing (Draw. 23–a, 24–b, 25–c)	2	2	2
Physical Education (Phys. Ed. 4–a, 5–b, 6–c)	1	1	1
Electives	3 or 4	3 or 4	5 or 6
	18	18	18

Junior Year

Elementary Economics (Econ. 1–a, 2–b)	3	3	
Household Chemistry (Chem. 23–a)	3		
Household Physics (Phys. 12–a)	3		
Bacteriology (Bot. 8–a)	3		
Advanced Cooking (H. E. 13–b)		3	
Nutrition and Dietetics (H. E. 15–b, 16–c)		3	3
Home Management (H. E. 20–c)			3
House Decoration (H. E. 19–c)			2
Physical Education (Phys. Ed. 7–a, 8–b, 9–c)	1	1	1
Electives	5	8	9
	18	18	18

Senior Year

Institutional Management (H. E. 24–a)	4		
Industrial Management (N. E. 25–b)		4	
Institutional Practice (H. E. 26–c)			12
Electives	11	11	
	15	15	12

*Not required of those who offer Physics for entrance credit.

Teacher Training Course

Freshman Year

	Fall Term ("A")	Winter Term ("B")	Spring Term ("C")
English Composition (Eng. 1–a, 2–b, 3–c)	3	3	3
Drawing (Draw. 20–a, 21–b, 22–c)	2	2	2
Inorganic Chemistry (Chem. 6–a, 7–b, 8–c)	3	3	3
**Physics* (Phys. 4–a, 5–b)	3	3	
Elementary Clothing (H. E. 1–a, 2–b)	2	2	
Personal Hygiene (Phys. Ed. 13–a)	2		
Textiles (H. E. 3–c)			3
Physical Education (Phys. Ed. 1–a, 2–b, 3–c)	1	1	1
Electives	3	3	6
	19	17	18

Sophomore Year

Foods and Principles of Cooking (H. E. 4–a, 5–b, 6–c)	4	4	4
Elementary Dressmaking (H. E. 11–c)			3
Physiology (Zoöl. 33–a, 34–b)	3	3	
Hygiene and Sanitation (Zoöl. 35–c)			3
Drawing (Draw. 23–a, 24–b, 25–c)	2	2	2
Organic Chemistry (Chem. 15–a, 16–b)	2	2	
Household Physics (Phys. 12–a)	3		
Physical Education (Phys. Ed. 4–a, 5–b, 6–c)	1	1	1
Electives	3	6	5
	18	18	18

Junior Year

Bacteriology (Bot. 8–a)	3		
Household Chemistry (Chem. 23–a)	3		
Elementary Economics (Econ. 1–a, 2–b)	3	3	
General Psychology (Psych. 10–a)	3		
Secondary Education (Ed. 10–b, 11–c)		2	3
Advanced Cooking (H. E. 13–b)		3	
Nutrition and Dietetics (H. E. 15–b, 16–c)		3	3
Intermediate Dressmaking (H. E. 17–b)		3	
House Decoration (H. E. 19–c)			2
House Management (H. E. 20–c)			3
Physical Education (Phys. Ed. 7–a, 8–b, 9–c)	1	1	1
Electives	4	2	5
	17	17	17

* Not required of those who offer Physics for entrance credit.

FOUR-YEAR COURSES

Senior Year

	Fall Term ("A")	Winter Term ("B")	Spring Term ("C")
Home Nursing (H. E. 21–a)	2		
Special Methods (H. E. 27–b)		3	
‡*Practice Teaching* (H. E. 28–c)			8 or 9
Education, Vocational Education (Ed. 20–a)	3		
Education, School Hygiene (Ed. 28–c)			3
Sociology (Soc. 3–a, 4–b)	3	3	
Adolescent Psychology (Psych. 20–b)		3	
† *Electives and Practice House* (H. E. 22–a, b)	4 or 7	3 or 6	
	15 or 18	15 or 18	12

*ARTS COURSE IN CHEMISTRY

Freshman Year

Inorganic Chemistry (Chem. 1–a, 2–b, 3–c)	3	3	3
Qualitative Analysis (Chem. 4–c)			3
Trigonometry (Math. 1–a)	3		
Algebra (Math. 2–a, 3–b)	3	3	
Analytic Geometry (Math. 4–b, 5–c)		3	3
Calculus (Math. 6–c)			3
Zoölogy (Zoöl. 1–a, 2–b) *or* *Botany* (Bot. 1–a, 2–b)	3	3	
English (Eng. 1–a, 2–b, 3–c)	3	3	3
§*Military Art* (M. A. 1–a, 2–b, 3–c)	1½	1½	1½
§*Physical Education*	½	½	½
	17	17	17

Sophomore Year

Organic Chemistry (Chem. 20–a, 21–b, 22–c)	2	3	3
Inorganic Prep. (Chem. 17–a)	2		
Qualitative Chemistry (Chem. 9–a)	3		
Quantitative Analysis (Chem. 18–b, 19–c)		5	7
German (Ger. 1–a, 2–b, 3–c) *or* *French* (Fr. 1–a, 2–b, 3–c)	3	3	3
Calculus (Math. 7–a)	3		
Machine Work (Shop 22–c)			3
Drawing (Draw. 5–a)	2		
§*Military Art* (M. A. 4–a, 5–b, 6–c)	1½	1½	1½
§*Physical Education*	½	½	½
Calculus (Math. 8–b) *or* *Electives*		3	
Elective		3	
	17	16	18

* Students planning to teach Chemistry are advised to elect subjects in Education.

† Practice House (H. E. 22–a, b) is required during the Fall or Winter Term. During the term this subject is taken, the student will be allowed to carry not more than 15 credit hours. The other one of the first two terms 18 credit hours should be carried.

‡ While practice teaching no other subject should be scheduled except Ed. 28–c.

§ Physical Education for Women giving 1 credit, is required of women students instead of Military Art and Physical Education for men as listed.

Junior Year

	Fall Term ("A")	Winter Term ("B")	Spring Term ("C")
Physical Chemistry (Chem. 29–a, 30–b, 31–c)	3	3	3
Quantitative Analysis (Chem. 26–a, 27–b, 28–c)	4	4	4
Organic Laboratory (Chem. 23–b, 24–c)		2	2
Physics (Phys. 6–a, 7–b, 8–c)	3	3	3
Physics (Phys. 9–a, 10–b, 11–c)	3	3	3
Electives	3	3	3
	16	18	18

Senior Year

Physical Laboratory (Chem. 42–a)	2		
Advanced Inorganic Chemistry (Chem. 32–a)	3		
Thesis (Chem. 39–a, 40–b, 41–c)	5	5	5
Rare Elements (Chem. 33–b, 34–c)		3	3
Electives (three may be added to thesis each term)	6	9	9
	16	17	17

MECHANIC ARTS COURSE FOR TEACHERS

Freshman Year

English Composition (Eng. 1–a, 2–b, 3–c)	3	3	3
Inorganic Chemistry (Chem. 1–a, 2–b, 3–c)	3	3	3
Algebra (Math. 101–a)	3		
Trigonometry (Math. 1–a)	3		
Shop Mathematics (Math. 102–b)		3	
Practical Mathematics (Math. 103–c)			3
Engineering Drawing (Draw. 1–a)	3		
Machine Drawing (Draw. 2–b, 3–c)		3	3
Wood Work (Shop 1–a, 2–b, 3–c)	2	2	2
Military Art (M. A. 1–a, 2–b, 3–c)	1½	1½	1½
Physical Education	½	½	½
Electives		2	2
	19	18	18

Sophomore Year

Qualitative Analysis (Chem. 4–a, 5–b)	3	3	
Introductory Physics (Phys. 1–a, 2–b, 3–c)	3	3	3
Elementary Economics (Econ. 1–a, 2–b)	3	3	
Descriptive Geometry (Draw. 4–a)	3		
Free Hand Drawing (Draw. 102–b)		3	
Elements of Architecture (Draw. 103–c)			3
Wood Work (Shop 101–a, 102–b, 103–c)	2	2	2
Military Art (M. A. 4–a, 5–b, 6–c)	1½	1½	1½
Physical Education	½	½	½
Electives	2	2	8
	18	18	18

FOUR-YEAR COURSES

Junior Year

	Fall Term ("A")	Winter Term ("B")	Spring Term ("C")
Advanced English Composition (Eng. 4–a)	3		
United States History (Hist. 10–a, 11–b)	3	3	
Secondary Education (Educ. 10–b, 11–c)		2	3
Elements of Psychology (Psych. 10–a)	3		
Citizenship (Pol. Sc. 5–c)			3
Dendrology (For. 2–c)			4
Architectural Drawing (Draw. 40–a, 41–b)	3	3	
Wood Work (Shop 9–a, 10–b)	2	2	
Carpentry (Shop 11–c)			2
Forge (Shop 21–c)			3
Electives	4	8	3
	18	18	18

Senior Year

Vocational Education (Educ. 20–a)	3		
School Hygiene (Educ. 28–c)			3
Social Pathology (Soc. 3–a)	3		
Economic History of the U. S. (Econ. 9–b)		3	
Economic History of Modern Europe (Econ. 11–c)			3
Adolescent Psychology (Psych. 24–b)		3	
Practice Teaching (Shop 26–a)	2		
Machine Work (Shop 23–a, 24–b, 25–c)	3	3	3
Manual Training Practice (Shop 27–b, 28–c)		2	2
Industrial Electricity (E. E. 6–a)	3		
Electives	4	7	6
	18	18	17

ENGINEERING DIVISION

CHARLES E. HEWITT, *Dean*

Chemical Engineering Course.—This course is intended to fit the student for the career of professional chemist or chemical engineer, and to give a good foundation for original and independent chemical research.

Instruction is imparted by lectures, recitations and a large amount of carefully supervised laboratory work. The laboratory study is largely an individual one, and the work of each student is conducted with reference not only to the particular object he may have in view, but also to the acquirement of a broad knowledge of chemical science. The student is given a thorough training in German and French to enable him to read with ease the chemical literature; a thorough grounding in mathematics, necessary for advanced theoretical chemistry or chemical engineering; a somewhat limited amount of special engineering work, both mechanical and electrical; and a thorough undergraduate training in theoretical and applied chemistry. He is encouraged to develop the power of solving chemical problems by independent thought through the aid of the reference works and chemical periodicals which the library contains.

Electrical Engineering Course.—The electrical engineering course is intended to meet the demands of young men fitting themselves for practical and professional engineering in connection with the various applications of electricity.

By means of lectures, recitations and laboratory work, the subjects of the course are brought to the attention of the student in such a manner as not only to emphasize the present needs of the practitioner and engineer, but to give him the principles that will enable him to grasp and understand the constantly increasing number of problems that require solution.

The instruction aims to impart a complete practical and theoretical knowledge of the best modern types of electrical

machines and appliances, and the methods of designing, building and operating them.

The rapid progress in recent years in applying electricity to commercial uses renders it difficult, if not impossible, for one without a technical education to gain prominence in the work and to be intrusted with its more responsible positions.

Mechanical Engineering Course.—The mechanical engineering course is intended to train young men for positions of responsibility in the field of the mechanical industries. The studies in the course are scientific, including mathematics, physics and chemistry; technical, including drawing, shop work, thermodynamics, hydraulics, machine design, electrical engineering, power engineering; and cultural, designed to fit him socially for his proper place in the world.

Instruction is given by means of text book work and laboratory work whenever possible. When necessary this work is supplemented by illustrated lectures and assigned reading. Throughout the course the theoretical work is supplemented by actual practice in mechanical operation and scientific research, by training in the use of tools for working wood and metals, and by experimental tests and demonstrations in the mechanical, chemical and physical laboratories.

ARCHITECTURAL, ELECTRICAL AND MECHANICAL CONSTRUCTION COURSES

The Engineering Division offers four-year courses in architectural, electrical and mechanical construction. These courses have been carefully prepared to meet the ever-increasing demand for strong four-year courses along practical lines. The present great demand for trained mechanics and technicians indicates clearly the need of training men in such courses.

The subjects offered in these courses have been so chosen as to involve less mathematics, physics and mechanics and more shop work, laboratory work and drawing than is required for the regular four-year engineering courses.

It will be noted that the subjects taken in the first term of the freshman year are the same as those given in the regular four-year electrical and mechanical engineering courses. The differentiation takes place at the end of the first term. These constructional courses are intended to fit a student for the practical work of a superintendent of construction, etc.

All of the subjects with numbers less than 100 are regular four-year subjects as given in the engineering courses, a description of which will be found in the catalog under the particular department in which the subject is given. All numbers from 100 to 200 are new subjects, adapted to meet the requirements of the new courses in Construction. Description of the new subjects will also be found under the department in which the subjects are given.

ENGINEERING DIVISION

ELECTRICAL AND MECHANICAL ENGINEERING COURSES

	Fall Term ("A")	Winter Term ("B")	Spring Term ("C")
Freshman Year			
English Composition (Eng. 1–a, 2–b, 3–c)	3	3	3
Inorganic Chemistry (Chem. 1–a, 2–b, 3–c)	3	3	3
Trigonometry (Math. 1–a)	3		
Algebra (Math. 2–a, 3–b)	3	3	
Analytical Geometry (Math. 4–b, 5–c)		3	3
Calculus (Math. 6–c)			3
Engineering Drawing (Draw. 1–a, 2–b, 3–c)	3	3	3
Woodwork (Shop 1–a)	2		
Forging (Shop 5–c)			2
Military Art (M. A. 1–a, 2–b, 3–c)	1½	1½	1½
Physical Education	½	½	½
	19	17	19
Sophomore Year			
Qualitative Analysis Laboratory (Chem. 11–a, 12–b)	3	3	
Calculus (Math. 7–a, 8–b, 9–c)	3	3	3
Physics (Phys. 6–a, 7–b, 8–c)	3	3	3
Physics Laboratory (Phys. 9–a, 10–b, 11–c)	3	3	3
Kinematics of Machinery (M. E. 1–b)		3	
Mechanics of Engineering (M. E. 2–c)			4
Machine Work (Shop 6–a, 7–b, 8–c)	2	2	2
Descriptive Geometry (Draw. 4–a)	3		
Military Art (M. A. 4–a, 5–b, 6–c)	1½	1½	1½
Physical Education	½	½	½
	19	19	17

FOUR-YEAR COURSES

Junior Year

	Fall Term ("A")	Winter Term ("B")	Spring Term ("C")
Dynamo Electric Machinery (E. E. 1–a, 2–b, 3–c)	4	4	4
Mechanics of Engineering (M. E. 3–a, 4–b)	3	3	
Mechanics Laboratory (M. E. 5–a, 6–b, 7–c)	2	2	2
Materials of Construction (M. E. 8–a)	3		
Valve Gear and Boiler Design (M. E. 9–a)	3		
Machine Design (M. E. 10–b, 11–c)		3	3
Thermodynamics (M. E. 14–b, 15–c)		3	3
Electives	3	3	6
	18	18	18

Electrical Engineering

Senior Year

Surveying (Math. 19–a, 20–c)	3		3
Electrical Engineering Practice (E. E. 7–a, 8–b)	3	3	
Electrical Laboratory (E. E. 11–a, 12–b, 13–c)	3	3	3
Electric Railways (E. E. 10–b)		3	
Hydro-Electric Development (E. E. 9–c)			3
Illuminating Engineering (E. E. 19–c)			3
Design of Electrical Machinery (E. E. 18–c)			3
Contracts and Specifications (E. E. 20–c)			2
Power Plant Engineering (M. E. 16–a, 17–b)	3	3	
Mechanical Laboratory (M. E. 18–a)	2		
Hydraulics (M. E. 12–a, 13–b)	3	3	
Pattern Making (Shop 29–c)			2
Elective		1	
	17	16	19

Mechanical Engineering

Senior Year

Surveying (Math. 19–a, 20–c)	3		3
Power Plant Engineering (M. E. 16–a, 17–b)	3	3	
Mechanical Laboratory (M. E. 18–a, 19–b, 20–c)	2	2	2
Industrial Engineering (M. E. 25–a, 26–b)	3	2	
Hydraulics (M. E. 12–a, 13–b)	3	3	
Machine Design (M. E. 23–b, 24–c)		2	2
Heat and Ventilation (M. E. 21–b, 22–c)		3	3
Hydro-Electrical Development (E. E. 9–c)			3
Contracts and Specifications (E. E. 20–c)			2
Woodwork (Shop 29–c)			2
Electives	3	3	
	17	18	17

ELECTIONS FOR ELECTRICAL AND MECHANICAL ENGINEERING

	Fall Term ("A")	Winter Term ("B")	Spring Term ("C")
Principles of Economics (Econ. 1–a, 2–b)	3	3	
Labor Problems (Econ. 4–a)	3		
Corporation Finance (Econ. 7–a)	3		
Business Accounting (Econ. 12–a, 13–b, 14–c)	3	3	3
Cost Accounting (Econ. 15–a, 16–b)	3	3	
Money and Banking (Econ. 5–b)		3	
Transportation (Econ. 10–b)		3	
Industrial and Commercial Geography (Econ. 3–c)			3
Principles of Public Finance (Econ. 6–c)			3
Economic History of Modern Europe (Econ. 11–c)			3
Social Pathology and Modern Philanthropy (Soc. 1–a, 2–b)	3	3	
Introduction to Psychology (Psych. 1–b, 2–c)		3	3
American Constitutional Law (Pol. Sc. 2–b)		3	
International Law (Pol. Sc. 3–c)			3
Writing for Publication (Eng. 6–c)			3
Public Speaking (Eng. 7–c)			3
Advanced Calculus (Math. 10–a, 11–b, 12–c)	3	3	3
Advanced Analytic Geometry (Math. 16–a, 17–b, 18–c)	3	3	3
Theory of Equations and Determinants (Math. 14–b, 15–c)		3	3
Problems (E. E. 21–b)		2	
Telegraph and Telephone (E. E. 4–c)			3
Machine Work (Shop 108–b, 109–c)		2	2
Military Art (M. A. 7–a, 8–b, 9–c)	3	3	3
Military Art (M. A. 10–a, 11–b, 12–c)	3	3	3

CHEMICAL ENGINEERING COURSE

Freshman Year

English Composition (Eng. 1–a, 2–b, 3–c)	3	3	3
French (Fr. 1–a, 2–b, 3–c) *or* *German* (Ger. 1–a, 2–b, 3–c)	3	3	3
Inorganic Chemistry (Chem. 1–a, 2–b, 3–c)	3	3	3
Trigonometry (Math. 1–a)	3		
Algebra (Math. 2–a, 3–b)	3	3	
Analytic Geometry (Math. 4–b, 5–c)		3	3
Calculus (Math. 6–c)			3
Drawing (Draw. 5–a)	2		
Military Art (M. A. 1–a, 2–b, 3–c)	1½	1½	1½
Physical Education	½	½	½
	19	17	17

FOUR-YEAR COURSES

Sophomore Year

	Fall Term ("A")	Winter Term ("B")	Spring Term ("C")
German (Ger. 4–a, 5–b, 6–c)	3	3	3
Organic Chemistry (Chem. 19–a, 20–b, 21–c)	2	3	3
Qualitative Analysis (Chem. 10–a)	6		
Quantitative Analysis (Chem. 17–b, 18–c)		5	7
Calculus (Math. 7–a, 8–b, 9–c)	3	3	3
Mineralogy (Miner. 1–b)		3	
Military Art (M. A. 4–a, 5–b, 6–c)	1½	1½	1½
Physical Education	½	½	½
	16	19	18

Junior Year

Physical Chemistry (Chem. 28–a, 29–b, 30–c)	3	3	3
Organic Chemical Laboratory (Chem. 23–a, 24–b)	2	2	
Quantitative Analysis (Chem. 25–a, 26–b, 27–c)	4	5	4
Physics (Phys. 6–a, 7–b, 8–c)	3	3	3
Physics (Phys. 9–a, 10–b, 11–c)	3	3	3
Machine Work (Shop 22–c)			3
Electives	3	3	3
	18	19	19

Senior Year

Industrial Chemistry (Chem. 34–a, 35–b, 36–c)	3	3	3
Physical Chemistry Laboratory (Chem. 41–a)	2		
Quantitative Analysis (Chem. 37–a)	4		
Thesis (Chem. 39–b, 40–c)		6	6
Electrical Engineering (E. E. 15–a, 16–b, 17–c)	3	3	3
Mechanical Engineering (M. E. 8–a)	3		
Mechanical Engineering (M. E. 14–b, 15–c)		3	3
Electives	3	3	3
	18	18	18

ARCHITECTURAL, ELECTRICAL AND MECHANICAL CONSTRUCTION COURSES

Freshman Year

English Composition (Eng. 1–a, 2–b, 3–c)	3	3	3
Inorganic Chemistry (Chem. 1–a, 2–b, 3–c)	3	3	3
Trigonometry (Math. 1–a)	3		
Algebra (Math. 101–a)	3		
Shop Mathematics (102–b)		3	
Practical Mathematics (103–c)			3
Engineering Drawing (Draw. 1–a, 2–b, 3–c)	3	3	3
Wood Work (Shop 1–a, 2–b, 3–c)	2	2	2
Military Art (M. A. 1–a, 2–b, 3–c)	1½	1½	1½
Physical Education	½	½	½
Electives		3	3
	19	19	19

Sophomore Year

	Fall Term ("A")	Winter Term ("B")	Spring Term ("C")
Qualitative Analysis Laboratory (Chem. 11–a, 12–b)	3	3	
Physics (Phys. 1–a, 2–b, 3–c)	3	3	3
Accounting (Econ. 12–a, 13–b, 14–c)	3	3	3
Descriptive Geometry (Draw. 4–a)	3		
Free Hand Drawing (Draw. 102–b)		3	
Elements of Architecture (Draw. 103–c)			3
Wood Work (Shop 101–a) *or* *Forging* (Shop 104–a)	2		
Wood Work (Shop 102–b, 103–c) *or* *Machine Work* (Shop 105–b, 106–c)		2	2
Mechanics of Engineering (M. E. 101–b, 102–c)		3	3
Military Art (M. A. 4–a, 5–b, 6–c)	1½	1½	1½
Physical Education	½	½	½
	16	19	16

ARCHITECTURAL CONSTRUCTION COURSE

Junior Year

Architectural Drawing (Draw. 104–a, 105–b, 106–c)	3	3	3
Building Construction (Draw. 107–b, 108–c)		4	4
Elements of Electrical Construction (E. E. 101–a, 102–b, 103–c)	3	3	3
Materials of Construction (M. E. 8–a)	3		
Mechanics of Engineering (M. E. 103–a)	3		
Mechanical Laboratory (M. E. 107–a)	2		
Clay Products and Building Stones (Geol. 100–b)		2	
Heating, Ventilating, Plumbing and Electrical Appliances (Phys. 101–c)			3
Electives	3	6	6
	17	18	19

Senior Year

Building Construction and Design (Draw. 109–a, 110–b)	8	8	
Architectural Thesis (Draw. 111–c)			8
Contracts and Specifications (Draw. 112–c)			1
Heating and Ventilating (M. E. 111–a, 112–b)	4	4	
Industrial Engineering (M. E. 113–c)			3
Surveying (Math. 22–a, 23–c)	3		3
Electives	3	6	3
	18	18	18

ELECTRICAL AND MECHANICAL CONSTRUCTION COURSES

Junior Year

	Fall Term ("A")	Winter Term ("B")	Spring Term ("C")
Elements of Electrical Construction (E. E. 101–a, 102–b, 103–c)	3	3	3
Materials of Construction (M. E. 8–a)	3		
Mechanics of Engineering (M. E. 103–a)	3		
Mechanical Laboratory (M. E. 107–a, 108–b, 109–c)	2	2	2
Boiler Design and Graphics (M. E. 104–a)	3		
Boilers and Engines (M. E. 105–b)		3	
Machine Design (M. E. 110–b)		2	
Engines and Turbines (M. E. 106–c)			3
Machine Work (Shop 107–a, 108–b, 109–c)	2	2	2
Electives	3	6	9
	19	18	19

Senior Year

Electric Machinery (E. E. 103–a, 104–b) *or* *Heating and Ventilating* (M. E. 111–a, 112–b)	4	4	
Electric Lab. (E. E. 105–a, 106–b, 107–c) *or* *Mechanical Lab.* (M. E. 114–a 115–b, 116–c)	2	2	2
Electric Design (E. E. 108–a, 109–b)	2	3	
Hydro-Electric Development (E. E. 9–c) *or* *Contractors and Specifications* (E. E. 20–c)			2
Hydraulics (M. E. 119–b)		3	
Power Plants (M. E. 118–c)		3	3
Industrial Engineering (M. E. 113–c)			3
Surveying (Math. 22–a, 23–c)	3		3
Electives	6	3	4
	17	18	17

ELECTIONS FOR ARCHITECTURAL, ELECTRICAL AND MECHANICAL CONSTRUCTION COURSES

	Fall Term ("A")	Winter Term ("B")	Spring Term ("C")
Principles of Economics (Econ. 1–a, 2–b)	3	3	
Labor Problems (Econ. 4–a)	3		
Corporations (Econ. 7–a)	3		
Business Accounting (Econ. 12–a, 13–b, 14–c)	3	3	3
Cost Accounting (Econ. 15–a, 16–b)	3	3	
Money and Banking (Econ. 5–b)		3	
Transportation (Econ. 10–b)		3	
Industrial and Commercial Geography (Econ. 3–c)			3
Principles of Public Finance (Econ. 6–c)			3
Economic History of Modern Europe (Econ. 11–c)			3
Introduction to Psychology (Psych. 1–b, 2–c)		3	3
Social Pathology and Modern Philanthropy (Soc. 1–a, 2–b)	3	3	
American Constitutional Law (Pol. Sc. 2–b)		3	
Laws of Business (Pol. Sc. 1–a)	3		
International Law (Pol. Sc. 3–c)			3
The State (Pol. Sc. 4–c)			3
Writing for Publication (Eng. 6–c)			3
Public Speaking (Eng. 7–c)			3
Dendrology (For. 2–a)	4		
Problems (E. E. 21–b)		2	
Telegraph and Telephone (E. E. 4–c)			3
Military Art (M. A. 7–a, 8–b, 9–c)	3	3	3
Military Art (M. A. 10–a, 11–b, 12–c)	3	3	3

DESCRIPTION OF STUDIES

Departments are arranged alphabetically under their respective administrative divisions.

The number and title of each subject is given in black face type. The number of each subject is divided into two parts: first, the numeral designating the particular subject; and second, the letter (a, b, or c) designating the term in which the subject is given. The letter "a" indicates that a subject is given the first term; "b," the second term; and "c," the third term. A combination of the letters (a–b, b–c or a–b–c) attached to a numeral indicates that the subject is given through the term represented by each of the letters.

Following the number of each subject is the description of the work given, and the name of the instructor.

The next paragraph gives the following information in the order indicated: (1) prerequisites, if any; (2) in what courses the subject is required and the undergraduate year in which it should be taken; (3) the number of credits the subject will count toward graduation; (4) the number of lectures, recitations, or laboratory periods required a week. (Lectures and recitations are fifty minutes in length. Laboratory periods are two and one-half hours in length and an additional half-hour of work may be required for one credit hour.)

All subjects unless otherwise noted are open to students who have passed the prerequisites.

An elective subject will be given only when there is a minimum of five students registered for the same.

AGRICULTURAL DIVISION

FREDERICK W. TAYLOR, *Dean*

DEPARTMENTS

AGRONOMY	ANIMAL HUSBANDRY
BOTANY	DAIRY HUSBANDRY
ENTOMOLOGY	FORESTRY
HORTICULTURE	POULTRY HUSBANDRY

AGRICULTURE

FREDERICK W. TAYLOR, *Professor*

1–b. Survey of Agriculture. A brief history of agriculture as a business and scientific profession in this country; a general discussion and survey of the various branches of agriculture and the opportunities for work which each affords. The subject is intended primarily to assist the student in selecting his technical subjects in the later years of his college course. Professor Taylor.

Required of Freshmen in Agriculture. 1 credit: 1 lecture.

2–a. **Methods of Teaching.** In this subject will be included a discussion of the ways and means of presenting the subject-matter of the various phases of agriculture to the pupils in secondary schools; the handling of pupil projects; the organization and operation of a farm; and the relation of school agriculture to the farming of the community. Four to six weeks of practice teaching.

Required of Seniors taking the Teacher Training course. 3 credits: 3 lectures.

3–b. **Agricultural Seminar.** Library and reference work, the preparation of bibliographies, a study of the work and history of agricultural colleges and experiment stations. Professor Taylor.

Elective for Seniors in Agriculture. 1 credit: 1 lecture.

4–c. **Practice Teaching.** This subject will extend over a period of at least nine weeks in the spring term, during which the student will teach in some secondary school selected by the State Department of Education and the head of the Department of Education at New Hampshire College. The teaching work will be done under the supervision of a specialist in methods of agricultural education.

Required of Seniors taking the Teacher Training course and open only to these students. 12 credits.

AGRONOMY

FREDERICK W. TAYLOR, *Professor*
M. GALE EASTMAN, *Assistant Professor*

1–a. **Agricultural Engineering.** Lectures and recitations upon the mapping of farms; fencing; drainage; farm sanitation; tillage and harvesting machinery; concrete construction; silos; farm motors; roads and principles of draft. Practical work in map making, laying out drains, rope splicing, comparing farm machines, etc. Professor Taylor.

Required of Sophomores in Agriculture. 4 credits: 3 lectures; 1 laboratory.

2–a. **Field Crops.** Text book and recitations upon the history, use, value and methods of culture of our various field crops, including hay and grass, with particular reference to New England conditions. Laboratory practice in judging the different varieties of grains and grasses. Assistant Professor Eastman.

Required of Juniors in Agriculture, except in Forestry course. 3 credits: 2 lectures; 1 laboratory.

3–b. **Field Crops.** A continuation of 2–a.

Required of Juniors in Agriculture, except in Forestry course. 3 credits: 2 lectures; 1 laboratory.

4–c. Soils. Text book and recitations upon the formation, kinds and physical properties of soils; the movements and conservation of soil moisture; the relation of heat and air to soil; the nature and physical effects of tillage and fertilizers; laboratory work and experimentation with soils to show the physical effects of different conditions and texture. Assistant Professor Eastman.

Required of Juniors in Agriculture. 4 credits: 3 lectures; 1 laboratory.

5–b. Soil Fertility. Lectures, text book and recitations upon the chemistry of soils and the principles of fertility. Professor Taylor.

Prerequisite: Chemistry 3–c. Required of Seniors in Agriculture, except in Forestry course. 3 credits: 3 recitations.

6–c. Fertilizers. Lectures, text book and recitations upon the value, use and function of plant food materials, including manure, and upon the compounding and selection of fertilizers. Professor Taylor.

Prerequisite: Chemistry 3–c. Required of Seniors in Agriculture, except in Forestry course. 3 credits: 3 recitations.

7–c. Farm Accounting. Lectures and reference work relating to the principles of accounting and their application to the farm business. Laboratory exercises will include sets of complete cost accounts taken from actual farms. Assistant Professor Eastman.

Elective for Juniors. 3 credits: 1 lecture; 2 laboratories.

8–a. Farm Management. Text book, lectures and recitations upon the development of farming as a business, types of farming, size of farms, cropping systems, live stock problems, the marketing of farm products, and choosing and buying a farm. Practical work will be given in laying out farms, and in studying survey records of individual farms in order to find the labor income; also in analyzing the farm business record for the purpose of determining the effect of efficiency factors on the profits made. Exercises will be given in the arrangement and rearrangement of farm buildings, plotting the distribution of labor, and taking survey records. Assistant Professor Eastman.

Required of Seniors in Agriculture, except in Forestry course. 4 credits: 2 lectures; 2 laboratories.

9–b. Agricultural Statistics. An advanced subject for those who wish to familiarize themselves with proper methods of obtaining and tabulating statistics and experimental data. Lectures and laboratory work will deal with some of the common sources of error likely to affect scientific findings as well as everyday conclusions. Assistant Professor Eastman.

Elective for Seniors. 2 credits: 1 lecture; 1 laboratory.

10–c. **Types of Farming.** A statistical study of the types of farming in the United States, with special reference to crop rotation, area in crops, use of machinery, efficiency of man and horse labor, adaptability of crops and animals, and relative profits. Assistant Professor Eastman.

Elective for Seniors. 3 credits: 1 lecture; 2 laboratories.

11–b. **Special Agronomy.** Advanced work for students interested in some particular phase of Agronomy. No class exercises. The hours and kind of work must be arranged with the department before the subject is elected. Professor Taylor.

Prerequisites: Agronomy 1–a to 5–b inclusive. Elective for Seniors. 1 to 3 credits.

ANIMAL HUSBANDRY

OTTO L. ECKMAN, *Professor*
CLIFFORD J. FAWCETT, *Assistant Professor*

1–a. **Types and Breeds of Live Stock.** A study of the different breeds of horses, cattle, sheep, and swine in respect to their origin, history, development, characteristics, and adaptability to different conditions of climate and soil. One afternoon each week is devoted to judging the different breeds. Assistant Professor Fawcett.

Required of Freshmen in Agriculture. 4 credits: 3 recitations; 1 laboratory.

2–c. **Live Stock Judging.** The work consists of a study of the principles and practice of judging horses, beef cattle, sheep, and swine, and of the market classes and grades of horses and meat animals. Students intending to compete for the live stock judging team should elect this subject. For laboratory work, trips are taken to some of the best breeding establishments in New England. Assistant Professor Fawcett.

Prerequisite: Animal Husbandry 1–a. Required of students in the Teacher Training course. 3 credits: 3 recitations.

3–c. **Feeds and Feeding.** An elementary study of the laws of nutrition, the character, composition, and digestibility of feed stuffs, and methods of feeding different kinds of farm animals. Numerous samples of grains and by-products are used for the purpose of familiarizing the students with the different feed stuffs. Practice is given in calculating rations for various purposes. Professor Eckman.

Prerequisite: Chemistry 3–c. Required of Juniors in Animal Husbandry, Dairying Husbandry and Teacher Training courses. 4 credits; 3 recitations; 1 laboratory.

4–a. **Anatomy of Farm Animals.** Lectures and recitations upon the form and structure of the domesticated animals. Skeletons, various anatomical specimens, models, charts, and lantern slides are used to make the subject as practical as possible. The purposes of this subject are to show the relation between the skeleton and the form and function of the animal, and to serve as a foundation for the intelligent study of animal diseases and ailments. Professor Eckman.

Required of Juniors in Animal Husbandry. 4 credits: 3 recitations; 1 laboratory.

5–b. **Infectious Diseases of Animals.** A study of the more common economic infectious diseases of farm animals, their prevention and treatment, and general sanitation. Professor Eckman.

Prerequisite: Animal Husbandry 4–a. Required of Juniors in Animal Husbandry. 4 credits: 3 recitations; 1 laboratory.

6–c. **Non-Infectious Diseases and Ailments.** A study of the common non-infectious diseases and ailments of farm animals and their treatment; unsoundness of the horse, principles of horseshoeing, and the practice of simple surgical operations. Professor Eckman.

Prerequisite: Animal Husbandry 4–a. Required of Juniors in Animal Husbandry. 4 credits: 3 recitations; 1 laboratory.

7–a. **Animal Breeding.** A study of the principles and practices of breeding farm animals. Practice is given in tracing out and studying pedigrees. Professor Eckman.

Prerequisite: Animal Husbandry 1–a. Required of Seniors in Animal Husbandry, Dairy Husbandry and Teacher Training courses. 4 credits: 3 recitations; 1 laboratory.

8–c. **Live Stock Markets and Products.** A study of the various kinds of live stock markets and of the methods and regulations applying to the transportation of live stock. Some time will be spent in a study of the live stock centers, the stock yards, and the government inspection of animals before and after slaughter. The butchering of animals on the farm and the various cuts of meats will be discussed. References will be supplied to the student for individual work. Occasional trips will be taken to slaughter houses and packing plants. Assistant Professor Fawcett.

Prerequisite: Animal Husbandry 2–c. Elective for Seniors. 3 credits: 3 recitations.

9–a. **Sheep and Swine Husbandry.** A consideration of the judging, breeding, feeding, management and preparation for the show ring of

sheep and swine, with special reference to New Hampshire conditions. Assistant Professor Fawcett.

Prerequisites: Animal Husbandry 1–a and 3–c. Elective for Seniors. 4 credits: 3 recitations; 1 laboratory.

10–b. **Management of Horses and Beef Cattle.** Lectures and recitations upon the care of brood mares and cows, management of stallions and bulls, the breaking and training of colts, preparation of animals for the show ring, the management of pure bred beef herds, and the feeding and handling of steers and oxen. Professor Eckman.

Prerequisites: Animal Husbandry 1–a and 3–c. Elective for Seniors. 4 credits: 3 recitations; 1 laboratory.

11–c. **Animal Nutrition.** An advanced consideration of the subject of digestion, absorption and assimilation; a study of the relationship of various feeds to nutrition, their composition and digestibility, and their function in metabolism. Professor Eckman.

Prerequisite: Animal Husbandry 3–c. Elective for Seniors. 3 credits: 3 recitations.

BOTANY

ORMOND R. BUTLER, *Professor*
FREDERICK C. WERKENTHIN, *Associate Professor*
—— ——, *Instructor*

1–a. **General Botany.** The purpose of this subject is to give the student a general knowledge of the morphology, evolution, and classification of plants and the structure of cells and tissues. Representative types in the plant kingdom, beginning with the simple forms, are studied to show the development of the plant body, the increase in specialization of the reproductive process, and the adaption of plants to dry land conditions. Associate Professor Werkenthin.

Required of Freshmen in Agriculture. 3 credits: 1 lecture; 2 laboratories.

2–b. **General Botany.** Continuation of 1–a. Associate Professor Werkenthin.

Prerequisite: Botany 1–a. Required of Freshmen in Agriculture. 3 credits: 1 lecture; 2 laboratories.

3–c. **General Botany.** Continuation of 2–b. Associate Professor Werkenthin.

Prerequisite: Botany 2–b. Required of Freshmen in Agriculture. 3 credits: 1 lecture; 2 laboratories.

4–b. **Plant Physiology.** Structure and properties of the cell; absorption and movement of water; metabolism; growth and irritability.

Prerequisite: Botany 3–c. Required of Juniors in Forestry and Horticulture. 3 credits: 1 lecture; 2 laboratories.

5–c. Plant Physiology. Continuation of 4–b.

Prerequisite: Botany 4–b. Required of Juniors in Forestry and Horticulture. 3 credits: 1 lecture; 2 laboratories.

6–a. Plant Histology. Characterization and differentiation of plant tissues; micro-technique.

Prerequisite: Botany 3–c. Required of Juniors in Forestry. 2 credits: 2 laboratories.

7–b. Plant Histology. Continuation of 6–a.

Prerequisite: Botany 6–a. Required of Juniors in Forestry. 2 credits: 2 laboratories.

8–a. General Bacteriology. Lectures on the morphology and physiology of the bacteria, the principal bacterial diseases, and the rôle of bacteria in the arts and industries. Associate Professor Werkenthin.

Required of all Agricultural students (excepting those in the Animal Husbandry and Dairy Husbandry course) and of Juniors in Home Economics. 3 credits: 3 lectures.

9–a. Bacteriology. Lectures and laboratory work on the morphology, taxonomy and physiology of the bacteria, the technique of isolation, and the principles of sterilization. Special attention is given to the bacteriological analysis of water, milk, and soils. Associate Professor Werkenthin.

Required of Animal Husbandry and Dairy Husbandry students. Students required to take Botany 8–a may substitute this subject on approval of the instructor. 3 credits: 1 lecture; 2 laboratories.

10–b. Bacteriology. Continuation of 9–a. Associate Professor Werkenthin.

Prerequisite: Botany 9–a. 3 credits: 1 lecture; 2 laboratories.

11–c. Bacteriology. Continuation of 10–b. Associate Professor Werkenthin.

Prerequisite: Botany 10–b. 3 credits: 1 lecture; 2 laboratories.

12–a. Plant Pathology. The fungous diseases of plants; their symptoms, cause and prevention. Associate Professor Werkenthin.

Prerequisite: Botany 3–c. Required of Seniors in Horticulture and Forestry. 3 credits: 1 lecture; 2 laboratories.

13–b. Plant Pathology. Continuation of 12–a. Associate Professor Werkenthin.

Prerequisite: Botany 12–a. 2 credits: 2 laboratories.

14–b. **Fungous Diseases of Plants.** The principal fungous diseases, their cure and prevention. The subject is designed to give the student such training in the identification of the common fungous maladies of our agricultural crops as will be serviceable in farming, school garden work, or any position in the field of plant industry in which elementary knowledge is sufficient or desirable. Associate Professor Werkenthin.

2 credits: 1 lecture; 1 laboratory.

15–a, b, c. **Advanced Botany.** The subject-matter will depend upon the training and desire of the student. It cannot be elected without previous consultation. Professor Butler and Associate Professor Werkenthin.

Credit hours by arrangement, one or more terms.

DAIRY HUSBANDRY

JOHN M. FULLER, *Professor*
HEBER F. DEPEW, *Instructor*
B. E. HUGGINS, *Instructor*

1–b. **Farm Dairying.** A general survey of the field of dairy husbandry. Such topics as the use of the Babcock test, farm separators, farm buttermaking and farm cheesemaking, and marketing dairy products, are included. Professor Fuller.

Required of Sophomores in Agriculture. 4 credits: 3 lectures; 1 laboratory.

2–c. **Dairy Cattle Judging.** Animals in college herd and in nearby herds will be judged. Professor Fuller.

Elective especially for Sophomores. All students of Agriculture interested in the dairy cattle judging team should elect this subject, to be followed by Dairy Husbandry 3–a. 2 credits: 1 lecture; 1 laboratory.

3–a. **Milk Production.** The field of dairy husbandry in its relation to the producer. Feeding dairy animals; systems of herd feeding; silage and soiling; raising dairy animals; dairy herd development; dairy barns; advanced registry management; fitting dairy animals for show; dairy cattle judging. Professor Fuller.

Elective for Juniors and Seniors. 4 credits: 3 lectures; 1 laboratory.

4–a. **Testing Dairy Products.** A thorough study of the Babcock test, with special work in testing various dairy products for butter fat; acidity tests for milk and cream; moisture tests for butter and cheese; use of lactometer. Mr. DePew.

Elective for Juniors and Seniors. 2 credits: 1 lecture; 1 laboratory.

5-b. **Market Milk.** Food value of milk; production, handling, and distribution of market and certified milk; dairy farm inspection; control of milk supply. Professor Fuller.

Required of Juniors in Animal and Dairy Husbandry, and Teacher Training courses. 4 credits: 3 lectures; 1 laboratory.

6-b. **Ice Cream and Cheesemaking.** (1) Lectures and laboratory work covering the manufacture of the more important types of cheese. (2) The making, handling, and marketing of ice cream and ices. Mr. DePew.

Elective for Juniors and Seniors. 4 credits: 2 lectures; 2 laboratories.

7-c. **Buttermaking.** A study of the secretion and of the chemical and physical properties of milk; pasteurization; cream ripening, starters, churning; organization and operation of factories. Mr. DePew.

4 credits: 2 lectures; 2 laboratories.

8-a. **Domestic Dairying.** Nutritive value of milk; market milk; modified milk; certified milk; condensed milk; milk powder; fermented milk; butter; cheese; and ice cream. Laboratory exercises are given in the manufacture of dairy products. Mr. DePew.

Elective for Juniors and Seniors in Home Economics and in Arts and Science courses. 3 credits: 2 lectures; 1 laboratory.

9-c. **Dairy Bacteriology.** Methods of bacteriological analysis of milk and its products; isolation and study of the different types of dairy bacteria; relation of bacteria to milk and its products; study of effect on bacteria in milk of separation, clarification, pasteurization, aeration, and straining; and the application of bacteriological principles to the dairy industry. Mr. DePew.

Prerequisite: Botany 8-a. Elective for Seniors in Animal Husbandry and Dairy Husbandry courses. 3 credits: 1 lecture; 2 laboratories.

10-c. **Dairy Research.** A study of experiment station and other dairy literature. Professor Fuller.

1 credit: 1 lecture.

ENTOMOLOGY

WALTER C. O'KANE, *Professor*
CLARENCE R. CLEVELAND, *Assistant Professor*

1-a. **Principles of Economic Entomology.** The relation of the structure and classification of insects to methods of insect control. The

preparation and application of insecticides. Spray machinery and appliances. Professor O'Kane and Assistant Professor Cleveland.

Required of Sophomores in Agriculture. Elective for Sophomores, Juniors and Seniors in other courses. 4 credits: 3 recitations; 1 laboratory.

2–b. **Insects of Orchard and Garden.** The application of methods of insect control to typical injurious species. Studies in the life histories and habits of important insect pests of orchard, garden and certain field crops. Adapted especially for students in Horticulture and in General Agriculture. Assistant Professor Cleveland.

Prerequisite: Entomology 1–a. Elective for Juniors and Seniors. 3 credits: 2 lectures; 1 laboratory.

3–a. **Insects of Domestic Animals.** The insect enemies of domestic live stock; their life histories, habits and means of their control. Adapted especially for students in Animal Husbandry. Assistant Professor Cleveland.

Prerequisite: Entomology 1–a. Elective for Juniors and Seniors. 3 credits: 2 lectures; 1 laboratory.

4–b. **Household Insects. Medical Entomology.** The life histories, habits and means of control of insects of the household and of stored products. The relation of insects to disease. Adapted especially for students in Home Economics. Professor O'Kane and Assistant Professor Cleveland.

Elective for Sophomores, Juniors and Seniors. 3 credits: 3 lectures.

5–a. **Advanced Economic Entomology.** Detailed studies of problems involved in applied entomology. The literature of economic entomology. Investigational methods. Practice in arranging projects. Original investigations in the life history and habits of one or more injurious species. Adapted for advanced students. Professor O'Kane and Assistant Professor Cleveland.

Elective for Juniors and Seniors. Open to students only by permission of head of department. Credits and hours to be arranged.

6–b. **Advanced Economic Entomology.** Continuation of 5–a. Professor O'Kane and Assistant Professor Cleveland.

Elective for Juniors and Seniors. Open to students only by permission of head of department. Credits and hours to be arranged.

7–c. **Advanced Economic Entomology.** Continuation of 5–a and 6–b. Professor O'Kane and Assistant Professor Cleveland.

Elective for Juniors and Seniors. Open to students only by permission of head of department. Credits and hours to be arranged.

8–c. Forest Insects. Studies in the life histories and habits of the more destructive forest insects and the means of their control. Especially adapted for students in Forestry. Assistant Professor Cleveland.

Prerequisite: Entomology 1–a. Elective for Juniors and Seniors. 3 credits: 2 lectures; 1 laboratory.

FORESTRY

KARL W. WOODWARD, *Professor*
ALBERT W. GAMASH, *Assistant Professor*

1–a. Principles of Forestry. This subject is intended to meet the needs of students of Agriculture who desire an intelligent appreciation of the possibilities of the farm woodlot, and of others who wish to obtain a general knowledge of the principles of forestry. The value of forests, their protection, their utilization, their improvement, and regeneration are all discussed with special reference to New Hampshire conditions. Professor Woodward.

Required of all Sophomores in Agriculture. 4 credits: 3 lectures; 1 laboratory.

2–a. Dendrology. In this course are considered the uses and grades of lumber and other wood products, the identification of woods and the identification of our native tree species. Assistant Professor Gamash.

Required of Juniors in Forestry. 4 credits: 2 recitations; 2 laboratories.

3–a. Silviculture. The growing of timber crops, including the laws of forest growth, the improvement of immature stands, and forest regeneration both natural and artificial. Lectures and recitations, supplemented by field practice. Professor Woodward.

Required of Juniors in Forestry. 3 credits: 2 lectures; 1 laboratory.

4–b. Silviculture. A continuation of 3–a. Professor Woodward.

Prerequisite: Forestry 3–a. Required of Juniors in Forestry. 3 credits: 2 lectures; 1 laboratory.

5–c. Silviculture. Continuation of 4–b. Professor Woodward.

Prerequisite: Forestry 4–b. Required of Juniors in Forestry. 3 credits: 2 lectures; 1 laboratory.

6–b. Forest Mensuration. Principles and methods of scaling logs and cord wood and estimating lumber; also a study of the diameter, height, growth and yield of the commercial tree species found in New Hampshire. Assistant Professor Gamash.

Required of Juniors in Forestry. 4 credits: 2 lectures; 2 laboratories.

7–b. **Forest Management.** The management of woodlots and large forest tracts for the purpose of gaining the largest immediate and future returns; and the preparation of working plans to co-ordinate the lumbering, protection, improvement, and regeneration of forests so as to make them yield the highest net returns. Professor Woodward.

Prerequisites: Forestry 2–a, 5–c and 6–b. 3 credits: 1 lecture; 2 laboratories.

8–c. **Forest Management.** Continuation of 7–b. Professor Woodward.

Prerequisite: Forestry 7–b. 3 credits: 2 lectures; 1 laboratory.

9–a. **Forest Protection.** Consideration of measures for the protection of forests from fire, insects, fungous diseases, grazing, trespass, and taxes; and an examination of the federal and state laws relating to forest interests. Assistant Professor Gamash.

Prerequisite: Forestry 1–a. Required of Seniors in Forestry. 3 credits: 1 lecture; 2 laboratories.

10–a. **Advanced Forestry.** Work to be arranged according to the needs of individual students. Professor Woodward.

Prerequisites: Forestry 2–c, 5–c, and 6–c. Elective for Seniors in Forestry. 3 credits: 3 recitations.

11–b. **Advanced Forestry.** A continuation of 10–a. Professor Woodward.

Prerequisite: Forestry 10–a. 3 credits: 3 recitations.

12–c. **Advanced Forestry.** A continuation of 11–b. Professor Woodward.

Prerequisite: Forestry 11–b. 3 credits: 3 recitations.

13–b. **Forest Utilization.** A study of the methods and costs of logging, sawmilling and marketing, with special reference to the portable sawmill type of operation. Assistant Professor Gamash.

Required of Seniors in Forestry. 3 credits: 2 lectures; 1 laboratory.

14–b. **Practice of Forestry.** Development and present status of forestry in different countries; the work of the federal government and its management of the national forests; state forest policies; the lumber industry in the United States. Lectures and special readings. Professor Woodward.

Prerequisites: Forestry 2–a, 5–c and 6–b. Required of Seniors in Forestry. 4 credits: 4 recitations.

15–c. **Town Forest Problems.** A detailed study, for one who has had Forestry 51, of the forest problems of his home town. Aimed to

prepare those who are planning to settle in a definite locality to become expert in timber estimating and valuation, and artificial and natural regeneration in that locality. Individual conferences and reports. Professor Woodward.

Prerequisite: Forestry 1–a or (Forestry 51—1918–1919 catalog). 3 credits: 3 recitations.

HORTICULTURE

JOSEPH H. GOURLEY, *Professor*
WILLIAM H. WOLFF, *Associate Professor*
J. R. HEPLER, *Assistant Professor*
JAMES MACFARLANE, *Instructor*

1–c. **Vegetable Gardening.** This subject is designed to give a working knowledge of the various phases of vegetable production. It includes a study of garden soils, germination and planting of seeds, selection of varieties with reference to conditions in the state, construction and management of hot beds and cold frames, fertilizing, irrigation, and the packing and marketing of vegetables. Assistant Professor Hepler.

Required of Sophomores in Agriculture. 3 credits: 2 recitations; 1 laboratory.

2–a. **Greenhouse Construction and Management.** This subject aims to familiarize the student with modern methods of greenhouse work and the more important plants grown under glass. Sorts, varieties, culture, marketing, and enemies of greenhouse plants are studied. Each student is required to do practical work in propagating, potting, watering and ventilating. A study is made of the history and development of different types of greenhouses, including methods of heating and general management. Assistant Professor Hepler.

Required of Juniors in Horticulture. 3 credits: 1 lecture; 1 recitation; 1 laboratory.

3–c. **Practical Pomology.** A study of the fundamental problems of fruit growing; such as location, choice of site, kind and adaptability of soil for fruit growing, soil management, planting of orchards, pruning, sprays and spraying, thinning, harvesting and marketing. Associate Professor Wolff.

Required of Sophomores in Agriculture. 3 credits: 2 recitations; 1 laboratory.

4–b. **Viticulture and Small Fruit Culture.** A comprehensive study of the grape and small fruits, such as the strawberry, raspberry, blackberry, currant and gooseberry. Each fruit is studied with reference to its history, classification, propagation, planting, pruning, injurious insects and diseases, picking and marketing. Associate Professor Wolff.

Required in Horticultural course. 3 credits: 2 recitations; 1 laboratory.

5–a. **Systematic Pomology and Commercial Orcharding.** A study of fruit varieties with special reference to those adapted to New England conditions. Both tree and fruit characteristics are studied, and the student is required to recognize at sight the common varieties of fruits grown in this locality. In the laboratory special instruction is given in the packing of apples for market and in the judging of fruit. Professor Gourley.

Required of Seniors in Horticulture. 3 credits: 2 recitations; 1 laboratory.

6–b. **Advanced Pomology.** This subject deals with the management of commercial orchards, problems of marketing, transportation and co-operation. Special study is made of the experimental data which underlie orchard management. Professor Gourley.

Required of Seniors in Horticulture. 3 credits: 2 recitations; 1 laboratory.

7–c. **Landscape Gardening.** A study of the principles involved in ornamental and landscape gardening. Special attention is given to the beautifying of home surroundings. Laboratory work consists in landscape design and practice in laying out and planting home and public grounds. Assistant Professor Hepler.

Required of Juniors in Horticulture. 4 credits: 2 lectures; 1 recitation; 1 laboratory.

8–c. **Nursery Management.** A study of the methods of propagation and the care of trees, shrubs and perennial plants in the nursery. Lectures, reference readings and practice. Associate Professor Wolff.

Required of Juniors in Horticulture. 4 credits: 3 recitations; 1 laboratory.

9–b. **Floriculture.** A special study of the classification, history and development of the flowers and plants grown commercially and about the home, together with instruction and practice in their propagation and culture. Mr. Macfarlane.

Required of Juniors in Horticulture. 3 credits: 2 recitations; 1 laboratory.

10–c. **Evolution and Improvement of Plants.** The application of the principles of evolution to the improvement of plants. Variation, selection and heredity as applied to the problems of plant breeding in agricultural practice. Professor Gourley.

Required of Seniors in Horticulture and General Agriculture. 3 credits: 3 recitations.

11–b. **Vegetable Forcing.** A subject dealing with the study of special vegetables as grown under glass. Emphasis is placed upon the commercial phases of the work, including varieties, culture, style of

packages, and marketing. Each student is required to grow crops from seeding to maturity. In addition, a study of vegetable classification is given. Assistant Professor Hepler.

Required of Juniors in Horticulture. 3 credits: 1 lecture; 2 laboratories.

12–c. **Horticultural Seminar.** A review of the important horticultural literature and methods of investigational work. Professor Gourley.

Required of Seniors in Horticulture. 1 credit: 1 seminar meeting.

13–c. **Vegetable Gardening.** This subject takes up the problems of home and school gardening. It includes the study of methods of laying out and handling home, school and community gardens, choice of crops and varieties, their adaptation to local soil conditions, and the culture, displaying and judging of home garden vegetables. Assistant Professor Hepler.

Elective for women students. 3 credits: 1 lecture; 1 recitation; 1 laboratory.

14–a. **Advanced Horticulture.** Special work in horticulture may be taken by arrangement with the head of the department. Professor Gourley.

Prerequisites will depend upon the work taken. Elective for Seniors in Horticulture and General Agriculture. 2 to 5 credits: 2 to 5 exercises.

15–b. **Advanced Horticulture.** A continuation of 14–a. Special arrangements for this work must be made with the head of the department. Professor Gourley.

Elective for Seniors in Horticulture and General Agriculture. Time and credit to be arranged: 2 to 5 exercises.

16–c. **Advanced Horticulture.** A continuation of 15–b. Special arrangements for this work must be made with the head of the department. Professor Gourley.

Elective for Seniors in Horticulture and General Agriculture. Time and credit to be arranged: 2 to 5 exercises.

POULTRY HUSBANDRY

ALTON W. RICHARDSON, *Associate Professor*

1–b. **Farm Poultry.** A general subject in poultry husbandry, taking up the origin and history of the breeds, housing, and general management. Associate Professor Richardson.

Required of Sophomores in Agriculture. 3 credits: 2 lectures; 1 laboratory.

2–c. **Farm Poultry.** A continuation of 1–b, taking up incubation, brooding, breeding, feeding, and marketing. Associate Professor Richardson.

Prerequisite: Poultry 1–b. Required of Sophomores in Agriculture. 3 credits: 2 lectures; 1 laboratory.

3–b. **Home Poultry for Girls.** A subject designed to aid in giving a practical knowledge of poultry to girls who are taking the course in Home Economics, and also to any girls in the Arts and Science courses who may be interested. Associate Professor Richardson

3 credits: 2 lectures; 1 laboratory.

4–c. **Home Poultry for Girls.** A continuation of 3–b. Associate Professor Richardson.

Prerequisite: Poultry 3–b. 3 credits: 3 lectures.

5–a. **Poultry Management.** A subject in poultry management in which the students lay out plans and make drawings for a 1,000-bird poultry plant, taking into consideration every phase of management. Associate Professor Richardson.

Elective for Juniors and Seniors. 3 credits: 3 lectures.

6–b. **Poultry Diseases.** A subject treating of the anatomy of the fowl, with clinics showing various common poultry diseases, and lectures giving methods of prevention and cure. The question of poultry sanitation and hygiene is also studied. Associate Professor Richardson.

Elective for Juniors and Seniors. 2 credits: 2 lectures.

7–c. **Incubation.** A study of the theories involved in incubation and brooding, with each student running an incubator, keeping records of fertility and hatchability, running the brooder, and keeping records of the mortality of the chicks. Associate Professor Richardson.

3 credits: 2 lectures; 1 laboratory.

8–a. **Poultry Seminar.** A seminar subject where each student studies various recent bulletins of important poultry topics, writes abstracts of them and delivers to the class an opinion on the bulletins in question. An opportunity for students to do research work in poultry husbandry. Associate Professor Richardson.

Elective for Juniors and Seniors. 3 credits: 3 lectures.

9–c. **Poultry Feeding.** A subject dealing with the principles of feeding and the comparative value of various feeds and grains used in poultry feeding. Each student will be obliged to feed a pen of hens and a brood of chicks, getting actual practice in manipulating an oat sprouter,

and doing all the feeding involved in the care of the hens and chicks. Associate Professor Richardson.

3 credits: 2 lectures; 1 laboratory.

10-a. **Poultry Breeding.** A subject giving the theories and practice involved in breeding for egg production and for feathers; practical work in selecting the breeding stock, with special consideration as to their utility. Associate Professor Richardson.

Elective for Juniors and Seniors. 2 credits: 2 lectures.

ARTS AND SCIENCE DIVISION

ERNEST R. GROVES, *Dean*

DEPARTMENTS

ECONOMICS
ENGLISH
GEOLOGY
HOME ECONOMICS
LANGUAGES
SOCIOLOGY
EDUCATION AND PSYCHOLOGY
HISTORY AND POLITICAL SCIENCE
METEOROLOGY AND ASTRONOMY
ZOÖLOGY

[**ASTRONOMY**—See page 122.]

ECONOMICS

MARION O'K. MCKAY, *Assistant Professor*
VICTOR W. BENNETT, *Instructor*

1–a. **The Principles of Economics.** This subject is designed to acquaint the student with the general principles of the science which deals with the activities of man in securing a living. Such topics as the following will receive attention: the characteristics of the present economic system; the evolution of economic society; production and consumption; value and exchange; value and price; money, credit and banking; international trade; protection and free trade; the kinds and nature of wealth; its distribution in the form of rent, wages, interest, and profits. In addition to the foregoing, certain selected economic problems, such as transportation, insurance, socialism and agricultural problems will be considered. The elements of public finance will receive some attention. Assistant Professor McKay.

Elective for Sophomores, Juniors and Seniors. 3 credits: 1 lecture; 2 recitations.

2–b. **The Principles of Economics.** A continuation of 1–a. Assistant Professor McKay.

Prerequisite: Economics 1–a. Elective for Sophomores, Juniors and Seniors. 3 credits: 1 lecture; 2 recitations.

3–c. **Industrial and Commercial Geography.** A survey of the facts and principles of industry and commerce, and a brief consideration of the commercial development of nations. Particular attention will be given to the importance of natural and physical conditions as determinants of commercial development. Ocean traffic and the more important trade routes will receive attention. The more important commodities of commerce, the regions of their production, and the markets to which

they are sent are studied. Finally, attention will be given to commerce and industry during the war, and to the steps taken since the close of the war looking towards commercial and industrial development. Assistant Professor McKay.

Elective for Freshmen and Sophomores. 3 credits: 1 lecture; 2 recitations.

4–a. **Labor Problems.** This subject will in the main be concerned with what may be called modern problems of organized labor. The background and the structure of labor organizations will be studied first. Thereafter attention will be directed to strikes and their causes, lock-outs, boycotts, the open and closed shop, arbitration, the trade agreement, restriction of membership and output, legislative methods, labor legislation, labor parties. Some attention will be given to labor problems in connection with the prosecution of the war. Lastly the American Federation of Labor, the Industrial Workers of the World, and Bolshevism will be considered. Assistant Professor McKay.

Economics 4–a and 7–a will be given alternate years. Economics 4–a will not be given in 1919–1920. Prerequisite: Economics 2–b. Elective for Juniors and Seniors. 3 credits: 1 lecture; 2 recitations.

5–b. **Money and Banking.** A subject to acquaint the student with the principles and functions of money; the history of coinage in the United States; the money system in the United States; the value of money and prices; bi-metallism; credit; the origin and development of banking; the banking systems of England, France, Germany and Canada; the National Banking System of the United States; the Federal Reserve System; domestic and foreign exchange; savings banks; and trust companies. Assistant Professor McKay.

Prerequisite: Economics 2–b. Economics 5–b and 10–b will be given in alternate years. Economics 5–b will not be given in 1919–1920. 3 credits: 2 lectures; 1 recitation.

6–c. **Principles of Public Finance.** This subject aims to acquaint the student with the fundamental principles of public finance. A brief survey will be given of the enormous increases in the expenses of modern governments. The different methods of raising funds to meet the increasing expenses will be examined. Particular attention will be given to the theory and practice of taxation, recent reforms in taxation, war loans, and to taxation in New Hampshire. Assistant Professor McKay.

Prerequisite: Economics 2–b. The student is urged to take Economics 4–a before taking this subject. Elective for Juniors and Seniors. 3 credits: 1 lecture; 2 recitations.

7–a. **Corporations.** The subject-matter of this subject deals with the general nature of business organization, the evolution and forms of

business organization; a study of selected typical business corporations and finally, public policy towards the corporation and trust problems. The Sherman Act, the Clayton Act, and the Webb-Pomerence Law will be considered. Particular attention will be given to corporation finance. Assistant Professor McKay.

Prerequisite: Economics 2–b. The student is advised to take Economics 4–a before taking this subject. Economics 4–a and 7–a will be given in alternate years. Economics 7–a will be given in 1919–1920. Elective for Juniors and Seniors. 3 credits: 1 lecture; 2 recitations.

8–c. **Rural Economics.** Attention will first be directed to the beginnings of agriculture and to its development especially in the United States. Next will be considered the factors of agricultural production, farm management, the distribution of the agricultural income, marketing, co-operative organization, the federal farm loan banks, and price fixing by federal authority. Assistant Professor McKay.

Required of Seniors in Agriculture. Elective for other Juniors and Seniors. 3 credits: 1 lecture; 2 recitations.

9–b. **Economic History of the United States.** This subject aims to give a general survey of the economic history of the United States. Some attention is given to the study of the Industrial Revolution in Europe. Other topics considered are: early industries in the American colonies, English colonial policy, commerce, transportation, currency and banking, population and labor, slavery, agricultural machinery, economic integration and industrial organization. Assistant Professor McKay.

Prerequisite: Economics 2–b. Elective for Juniors and Seniors. 3 credits: 1 lecture; 2 recitations.

10–b. **Transportation.** This subject is concerned chiefly with the problems of railroad transportation in the United States. Particular attention is given to railroad finance and to federal control of the railroads during the recent war. Assistant Professor McKay.

Prerequisite: Economics 6–c. Elective for Juniors and Seniors. Economics 5–b and 10–b will be given in alternate years. Economics 10–b will be given in 1919–1920. 3 credits: 1 lecture; 2 recitations.

11–c. **Economic History of Modern Europe.** The purpose of this subject is to inquire into the origin, the nature and effects of the more important economic changes and achievements in Europe during the last three hundred years. Particular attention will be given to the more recent developments in Great Britain, France and Germany. Assistant Professor McKay.

Prerequisite: Economics 2–b. Elective for Juniors and Seniors. 3 credits: 3 recitations.

12–a. **Business Accounting.** A study of the fundamental principles of accounting, first in private or individual business, then the partnership, and closing with the corporation. Interpretation of accounts, business statements and records. The subject is intentionally made to cover a broad field in order that it may be of the greatest service to students from all three divisions, both men and women. Mr. Bennett.

Elective for Sophomores and Juniors in Arts and Science and for Seniors from all divisions. 3 credits: 2 recitations; 1 laboratory.

13–b. **Business Accounting.** A continuation of 12–a. Mr. Bennett.

Prerequisite: Economics 12–a. Elective for Sophomores and Juniors in Arts and Science and for Seniors from all divisions. 3 credits: 2 recitations; 1 laboratory.

14–c. **Business Accounting.** A continuation of 13–b. Mr. Bennett.

Prerequisite: Economics 13–b. Elective for Sophomores and Juniors in Arts and Science and for Seniors from all divisions. 3 credits: 2 recitations; 1 laboratory.

15–a. **Cost-Accounting.** The study of cost-accounting as it operates in a modern manufacturing concern. The student handles and becomes familiar with the best cost-keeping forms and records. Careful study is made of costs, especial attention being given to overhead expense or burden, including the problems of depreciation and idle factor time. Mr. Bennett.

Prerequisite: Economics 14–c. Elective for Sophomores and Juniors in Arts and Science and for Seniors from all divisions. 3 credits: 2 recitations; 1 laboratory.

16–b. **Cost-Accounting.** A continuation of 15–a. Mr. Bennett.

Prerequisite: Economics 15–a. Elective for Sophomores and Juniors in Arts and Science and for Seniors from all divisions. 3 credits: 2 recitations; 1 laboratory.

17–b. **Advanced Accounting.** Special study will be made of banking, corporation, and public utility accounting. This is largely a practical course making practical application of the theory of the previous subjects. The student will have an opportunity to select his specialty and will be given special work in that field. Mr. Bennett.

Prerequisite: Economics 14–c. Elective for Juniors and Seniors. 3 credits: 3 recitations.

18–c. **Advanced Accounting Problems.** A continuation of 17–b. Mr. Bennett.

Prerequisite: Economics 17–b. Elective for Juniors and Seniors.

19–b. **Auditing Theory and Practice.** Study of various kinds of audits, and their values; duties and responsibilities of the auditor; his report, certificates, etc. Special problems and model reports supplement the theory in the subject. Mr. Bennett.

Prerequisite: Economics 14–c. Elective for Juniors and Seniors. 3 credits: 3 recitations.

20–c. **Auditing Theory and Practice.** A continuation of 19–b. Mr. Bennett.

Prerequisite: Economics 19–b. 3 credits: 3 recitations.

EDUCATION AND PSYCHOLOGY

CHARLES L. SIMMERS, *Professor*

The training of teachers for high schools is recognized as one of the important functions of New Hamsphire College. In order to do this more adequately a Department of Education and Psychology has been established which has as its aims:

1. To offer prospective high school teachers, principals, and superintendents the necessary technical training for their profession.

2. To present educational history and educational problems in their more philosophic and scientific aspects so that they may be valuable to all college students preparing to become teachers.

To this end, it is expected that all students intending to teach will elect at least the following subjects in the Department of Education and Psychology, making a total of twenty term hours; Education 10–b, 11–c, 21–a, or 22–a and 28–c, and Psychology 1–b, 2–c and 24–b.

The prospective teacher should take either the general or Teacher Training course in Agriculture, the Manual Arts, or in Home Economics. If registered in the Arts and Science Division, he should major in the Department of Education, or elect a major and one or two minors in the several departments of the division. The aim should be to attain as intensive and extensive an education as possible during the four years spent in college.

The state of New Hampshire has accepted the provisions of the Smith-Hughes Act for training teachers of agriculture, home economics, and industrial education. New Hampshire College has been designated as the one state institution for the training of teachers in these subjects. Under the same Act New Hampshire has accepted federal money for the purpose of paying increased salaries in schools to be known as Smith-Hughes high schools. Students wishing to be prepared to teach in these schools should confer with the head of the Department of Education.

EDUCATION

10–b. **Secondary Education.** A systematic study of secondary school problems is made. Some of the topics considered are: value of scholar-

ship, qualities of the efficient teacher and his relation to the various elements of the school community, standards of professional conduct, school law, etc. Lectures, assigned readings and discussion. Professor Simmers.

Prerequisite: Psychology 2–c. Required of Juniors in Home Economics, Agriculture and Manual Arts. Junior subject. 2 credits: 2 recitations.

11–c. **Secondary Education.** A continuation of 10–b. Some of the topics are: broadening purposes of high-school instruction; how to manage the class; selection and arrangement of subject-matter; types of learning involved in high-school subjects; practice or drill; reflective thinking; training in expression, interest and learning; supervised study; conversational methods; laboratory methods; the art of questioning; lesson planning, etc. Each student is required to make systematic observations in schools near Durham. Lectures, assigned readings reports and discussion. Professor Simmers.

Prerequisite: Education 10–b. Required of Juniors in Home Economics, Agriculture and Manual Arts. Junior subject. 3 credits; 3 recitations.

20–a. **History and Principles of Vocational Education.** Some of the topics considered are: primitive industry and educational practice; industrial activity in the monasteries; the apprenticeship system; the Fellenberg Institute at Hoffwyl; the manual training, industrial, agricultural and home economics movements; vocational guidance, federal and state legislation concerning vocational education. Typical industrial, trade, evening, continuation, part time, home economics and agricultural schools will be studied. Lectures, assigned readings, and discussion. Professor Simmers.

Required of Seniors in Agriculture, Home Economics, and Manual Arts. Not open to other students. Senior subject. 3 credits: 3 recitations.

*21–a. **History of Education.** Before and during the Middle Ages. An attempt is made to show the relationship between the industrial, intellectual, social, philosophic, and religious ideals of the times, and the varying conceptions of aim, method, curricula, and organization of educational agencies. Lectures, assigned readings, and discussion. Professor Simmers.

Open only to Juniors and Seniors, except by permission. Senior subject. 3 credits: 3 recitations.

*22–a. **History of Education.** Modern Period. This subject is quite similar to Education 27–c in aim and method of treatment. It deals with the progress of society and related educational problems from

* Education 21–a and 22–a are given in alternate years. Education 21–a is given in 1919–1920.

the time of Comenius (beginning of seventeenth century) to the present time. It also attempts to show the origin and evolution of present theory and practice in education. Lectures, assigned readings and discussion. Professor Simmers.

Open only to Juniors and Seniors, except by permission. Senior subject. 3 credits: 3 recitations.

25–b. Principles of Education. In this subject a general background for educational thought and practice is sketched. The biological, psychological, social and ethical bases of education are considered. The aim is to give underlying principles and to show how they should function in the work of the grades and the high school. The subject is fundamental for those students intending to become principals or superintendents of schools. Lectures, assigned readings and discussion. Professor Simmers.

Prerequisite: Education 11–c. Senior subject. 3 credits: 3 recitations.

26–b. The School Principalship. The functions of the principal or head master, his relation to patrons, board of education, superintendent; discipline, grading, promotion, school law, teachers' meetings, educational measurements, school records, reports, etc. This subject should be elected by both men and women who wish to become principals of small school systems, and later, head masters. Those who elect this subject should have taken Psychology 2–c, Education 11–c, 21–a or 22–a, and should also take Psychology 24–b, Education 25–b, and 28–c. Also one or more subjects in "Special Methods in Education" (see page 107), should be taken. Lectures, assigned readings, reports, and discussion. Professor Simmers.

Senior subject. 2 credits: 2 recitations.

28–c. School Hygiene. The physical welfare of the pupil is considered in relation to his moral, social and intellectual development. Hygiene of play, study, work, daily programs, the selection of school-building site, heating, ventilation, medical inspection, communicable diseases, detection and treatment of defects of the senses, causes of fatigue and its relief and prevention, etc., are studied. Lectures, assigned readings and discussion. Professor Simmers.

Required of Seniors in Manual Arts, Home Economics and Agriculture. Senior subject. 3 credits: 3 recitations.

29–a–b–c. Supervised Practice Teaching. At some time during his senior year each student majoring in the Department of Education will be required to spend at least two weeks doing supervised practice teaching in the public high schools near Durham. The work will be

under the direction of the head of the Department of Education. Professor Simmers.

Open only to Seniors majoring in the Department of Education and Psychology. 2 or 3 credits.

Special Methods in:

1. Teaching Home Economics (see Home Economics 27–b).
2. Teaching Agriculture (see Agriculture 2–a).
3. Teaching Manual Arts (see Shop 26–a).
4. Teaching Mathematics (see Mathematics 13–a).
5. Teaching English (see English 17–a).

PSYCHOLOGY

1–b. **Introduction to Psychology.** A rapid survey of the physiological bases of human behavior is made. The nature of psychology, its scope and phases, the nervous system and the nature of its action, the various senses and their manner of functioning, habit, attention, etc., are studied. Lectures, assigned readings and quizzes are supplemented by simple laboratory demonstrations and experiments. Professor Simmers.

This subject must be taken also by those who elect other subjects in Psychology and Education. Sophomore subject. 3 credits: 3 recitations.

2–c. **Introduction to Psychology.** A continuation of 1–b. Perception, memory, reasoning, instinct, feeling, emotion, temperament, will, etc., are treated at length, in a practical and applied manner. Professor Simmers.

Prerequisite: Psychology 1–b. This subject must be taken also by those who elect other subjects in Psychology and Education. Sophomore subject. 3 credits: 3 recitations.

10–a. **Elements of Psychology.** As complete a study as possible is made of the psychology of the chief learning processes,—sensation, perception, memory, imagination, concept formation, reasoning, instinct, emotion and will. Professor Simmers.

Required of students in the Teacher Training courses in Home Economics, Agriculture and Manual Arts. Not open to other students. Junior subject. 3 credits: 3 recitations.

24–b. **Psychology of the Adolescent.** A study is made of the growth and development of the physical, psychic, intellectual, moral, social and religious nature of the adolescent boy and girl. The aim is to develop in the student a clearer insight into the nature of youth, particularly those of high school age, so that they can be dealt with in a more sympathetic and helpful manner. Lectures, assigned readings and discussion. Professor Simmers.

Prerequisite: Psychology 2–c or 10–a. Required of Seniors in Home Economics, Manual Arts and Agriculture. Senior subject. 3 credits: 3 recitations.

ENGLISH

ALFRED E. RICHARDS, *Professor*
CLARENCE W. SCOTT, *Professor*
HAROLD H. SCUDDER, *Associate Professor*
RUTH RICHARDSON, *Instructor*

1–a. **English Composition.** The chief aim of this subject is a thorough review of English grammar and syntax. Stress is laid also upon such fundamentals of written composition as punctuation, spelling, choice of words, and clearness of sentence structure. Short themes, both prepared and impromptu, and monthly reports upon outside reading are required. Professor Richards, Associate Professor Scudder, Miss Richardson.

Required of all Freshmen. 3 credits: 3 recitations.

2–b. **English Composition.** A continuation of 1–a. Professor Richards, Associate Professor Scudder, Miss Richardson.

Prerequisite: English 1–a. Required of all Freshmen. 3 credits: 3 recitations.

3–c. **English Composition.** A continuation of 2–b. This subject adds to the study of the principles of good writing, a training in literary appreciation. The characteristics of exposition, narration, description and argumentation are studied, and frequent themes illustrating these forms of composition are required. This work is supplemented by outside reading and monthly book reports. Professor Richards, Associate Professor Scudder, Miss Richardson.

Prerequisite: English 2–b. Required of all Freshmen. 3 credits: 3 recitations.

4–a. **Advanced Composition.** A study of English composition in respect to the technique of style, diction and literary form. The reading and discussion of essays by modern writers is supplemented by frequent themes, and by a study of oral English as a form of composition. Professor Richards.

Prerequisite: English 3–c. Required of Sophomores in Mechanic Arts. Elective for other Sophomores and Juniors. 3 credits: 3 recitations.

5–b. **Introduction to English Literature.** A general survey of English literature from its beginnings to the present day. To one who intends to teach English it is of fundamental importance. Lectures and recitations. Professor Richards.

Prerequisite: English 3–c. Elective for all classes. 3 credits: 3 recitations.

6–c. **Writing for Publication.** A practical study of the preparation of articles for the newspapers and magazines. It is for all whose voca-

tion will demand frequent writing for publication, and a preparation in part for those who intend to take up newspaper work after graduation. It does not cover the entire field of journalism, but the student will be instructed in the duties of a reporter and be given constant practice in writing news stories. Associate Professor Scudder.

Prerequisite: English 3–c. Elective for those who have attained a grade of "C" or higher in English 3–c. 3 credits: 3 recitations.

7–c. **Public Speaking.** A study of the principles and practice of public speaking, including debate. Each student acquires practice in both prepared and impromptu speaking upon topics of the day and subjects of educational value. Professor Richards.

Prerequisite: English 3–c. Elective for Juniors and Seniors. 3 credits: 3 recitations.

8–b. **History of the English Drama.** A survey of the English drama from its beginnings to the Closing of the Theatres. Constant reading of the plays with written criticisms and reports is required. Associate Professor Scudder.

Prerequisite: English 3–c. Elective for Sophomores, Juniors and Seniors. 3 credits: 3 lectures.

9–a. **The English Novel in the Nineteenth Century.** A study of the novel from Jane Austen to Thomas Hardy. There will be lectures, recitations and constant outside reading. Associate Professor Scudder.

Prerequisite: English 3–c. Elective for Juniors and Seniors. 3 credits: 3 recitations.

10–a. **American Literature.** Lectures and extensive outside reading. Professor Scott.

Prerequisite: English 3–c. Elective for Juniors and Seniors. 3 credits: 3 recitations.

11–b. **American Literature.** A continuation of 10–a. Professor Scott.

Elective for Juniors and Seniors. 3 credits: 3 recitations.

12–c. **American Literature.** A continuation of 11–b. Professor Scott.

Elective for Juniors and Seniors. 3 credits: 3 recitations.

13–b. **English Poetry.** A study of English poetry written between 1798 and 1918. Professor Richards.

Prerequisite: English 3–c. Elective for Juniors and Seniors. 3 credits: 3 recitations.

14–a. Shakespeare's Plays. A study of the principal plays of Shakespeare. Recitations and occasional dramatic representations of famous scenes. A large amount of reading required. Professor Richards.

Prerequisite: English 3–c. Elective for Juniors and Seniors. 3 credits: 3 recitations.

15–b. Comparative Study of the Drama. Reading of selected dramas from Greek, Latin, Spanish, French, Italian, German and Danish literature; from Aeschylus to Ibsen. English drama excluded. Constant reading, written criticisms and reports required. Miss Richardson.

Prerequisite: English 3–c. Elective for Juniors and Seniors. 3 credits: 3 recitations.

16–c. American Drama. A study of American drama, covering the period beginning with Thomas Godfrey's *Prince of Parthia*, 1767, and ending with plays of recent date. Miss Richardson.

Prerequisite: English 15–b. Elective for Juniors and Seniors. 3 credits: 3 recitations.

17–a. The Teaching of High School English. This subject is especially designed for those who major in English. It is the study and application of methods of teaching oral and written composition, poetry, prose fiction, the essay, drama and oration. Attention is given to outside reading, the school paper, dramatics and other aids to the teaching of English. Miss Richardson.

Prerequisite: English 4–a, and Education 2–b. Elective for Seniors. 3 credits: 3 recitations.

18–b. History of the Language. The object of this study is to give the student an intelligent appreciation of the English language as it has developed from its origin to the oral and written speech of today. Lectures, recitations and outside reading will constitute the work of the term. Professor Richards.

Prerequisite: English 3–c and 4–a. Elective for Seniors. 3 credits: 3 recitations.

19–c. History of the Language. A continuation of 18–b. Professor Richards.

Prerequisite: English 18–b. Elective for Seniors. 3 credits: 3 recitations.

20–c. The Essay. A study of the essay as represented in the writings of Lamb, Newman, Ruskin, Hazlitt, Harrison, and as employed by the leaders in the literary and scientific world of today. Professor Richards.

Prerequisite: English 4–a. Elective for Seniors. 3 credits: 3 lectures.

GEOLOGY

C. Floyd Jackson, *Professor*
Mr. —— ——, *Instructor*

1–a. **Elementary Geology.** A detailed study of the evolution of the earth, with special emphasis on the dynamic factors responsible for its present surface configuration. Local conditions will be studied, with reference to the factors of erosion, transportation and consolidation. Origin and distribution of economic mineral products will be discussed. Professor Jackson.

Required of Juniors in Agriculture. Elective for other Juniors and Seniors. 3 credits: 3 recitations.

2–c. **Historical Geology.** A detailed study of the history of various groups of animals, as recorded in the rocks of the earth's surface. Special attention will be given to the phylogenetic development of the vertebrates. Recitations, lectures and written reports required. Professor Jackson.

Prerequisites: Zoölogy 3–c, or 32–c. Elective for Juniors and Seniors. 3 credits: 3 recitations.

100–b. **Clay Products and Building Stones.** A study of the origin and distribution of building stones and clay products with special reference to their economic importance. Laboratory work will consist of the examination and testing of samples. Tests and microscopical examinations will be made with an attempt to determine their resistance to weathering, etc. Professor Jackson.

Open only to Juniors in Architectural Construction. 2 credits: 1 lecture; 1 laboratory.

HISTORY AND POLITICAL SCIENCE

Clarence W. Scott, *Professor*
Donald C. Babcock, *Assistant Professor*

HISTORY

In the subjects in history an important place is given to historical reading carried on in the reference room. In some cases a considerable part of the work is written.

1–a. **History of Europe from 476 to 1300.** Recitations and collateral reading. Professor Scott.

Elective for Freshmen in Arts and Science and Juniors in Mechanic Arts. 3 credits: 3 recitations.

2–b. **History of Europe from 1300 to 1492.** Recitations and collateral reading. Professor Scott.

Elective for Freshmen in Arts and Science and Juniors in Mechanic Arts. 3 credits: 3 recitations.

3–c. **History of Europe from 1492 to 1700.** Recitations and collateral reading. Professor Scott.

Elective for Freshmen in Arts and Science and Juniors in Mechanic Arts. 3 credits: 3 recitations.

4–a. **History of Europe from 1700 to 1815.** Recitations and collateral reading. Assistant Professor Babcock.

Prerequisite: History 3–c. Elective for Sophomores. 3 credits: 3 recitations.

5–b. **History of Europe from 1815 to 1871.** Recitations and collateral reading. Assistant Professor Babcock.

Prerequisite: History 4–a. Elective for Sophomores. 3 credits: 3 recitations.

6–c. **History of Europe since 1871.** Recitations and collateral reading. Assistant Professor Babcock.

Prerequisite: History 5–b. Elective for Sophomores. 3 credits: 3 recitations.

7–a. **American History to 1783.** With special reference to the political and constitutional development of the colonies. Assistant Professor Babcock.

Elective for Juniors in Arts and Science and Seniors in Mechanic Arts. 3 credits: 3 recitations.

8–b. **Political and Constitutional History of the United States from 1781 to 1829.** Assistant Professor Babcock.

Elective for Juniors in Arts and Science and Seniors in Mechanic Arts. 3 credits: 3 recitations.

9–c. **Political and Constitutional History of the United States from 1829 to 1861.** Assistant Professor Babcock.

Elective for Juniors in Arts and Science and Seniors in Mechanic Arts. 3 credits: 3 recitations.

10–a. **Political and Constitutional History of the United States from 1861 to 1880.** Assistant Professor Babcock.

Prerequisite: History 9–c. Elective for Seniors. 3 credits: 3 recitations.

11–b. **Political and Constitutional History of the United States since 1880.** Assistant Professor Babcock.

Prerequisite: History 10–a. Elective for Seniors. 3 credits: 3 recitations.

12–a. **Political and Constitutional History of England to 1485.** Assistant Professor Babcock.

3 credits: 3 recitations.

13-b. **Political and Social History of England from 1485 to 1714.** Assistant Professor Babcock.

3 credits: 3 recitations.

14-c. **Political and Social History of England since 1714.** Assistant Professor Babcock.

3 credits: 3 recitations.

POLITICAL SCIENCE

1-a. **Laws of Business.** Recitations, supplemented by the discussion of cases. Professor Scott.

Elective for Sophomores in Arts and Science, Juniors and Seniors in Mechanic Arts, and Seniors in Agriculture. 3 credits: 3 recitations.

2-b. **American Constitutional Law.** Recitations, supplemented by a study of the decisions of the United States Supreme Court. Special attention is given to the connection between American constitutions and American political history. Professor Scott.

Elective for Juniors and Seniors in Arts and Science and Mechanic Arts, and Seniors in Agriculture. 3 credits: 3 recitations.

3-c. **International Law.** Recitations and collateral work. Emphasis is placed on current events and recent developments in world organization. Assistant Professor Babcock.

3 credits: 3 recitations.

4-c. **The State.** The development of government from early forms; the government of modern European states. Recitations and collateral reading. Assistant Professor Babcock.

3 credits: 3 recitations.

5-b. **Civics.** A study of the functions, principles and organization of the American Government. Mr. Bennett.

3 credits: 3 recitations.

6-c. **Citizenship.** A course in civil government and civic responsibility. Assistant Professor Babcock.

3 credits: 3 recitations.

HOME ECONOMICS

LOUISE KNIGHT, *Assistant Professor and Acting Head of Department*
FRIEDA REINER, *Assistant Professor*
ARABELLA S. LIVINGSTON, *Instructor*
BERNICE SMITH, *Instructor*

1-a. **Elementary Clothing.** The fundamental principles of hand and machine sewing used in household linens and undergarments. Ele-

mentary drafting, cutting and fitting, applied to the making of undergarments, comparing the costs to those of ready-to-wear garments. Darning and mending. Students provide all material subject to the approval of the instructor. Miss Livingston.

Required of Freshmen in Home Economics Teacher Training course. 2 credits: 2 laboratories; 2 outside hours.

2–b. **Elementary Clothing.** A continuation of 1–a. Miss Livingston.

Prerequisite: Home Economics 1–a. 2 credits: 2 laboratories; 2 outside hours.

3–c. **Textiles and Weaving.** The textile fibres; their sources, production and uses; study of their physical and chemical properties; examination of the fibres and of woven fabrics. Judging of fabrics for personal and household purposes, considering the relative costs, durability and suitability. Miss Livingston.

Prerequisite: Chemistry 7–b; and 8–c taken as a parallel course. Required of Freshmen in Home Economics. Expense for trips about $4. 3 credits: 1 recitation; 2 laboratories.

4–a. **Foods and Principles of Cookery.** The history, manufacture, production, composition, selection and cost of foods. Principles of cookery applied to preservation and preparation of food, stressing the economic use and combinations of food in serving. Miss Reiner.

Prerequisites: Chemistry 8–c; Physics 5–b. Required of Sophomores in Home Economics. 4 credits: 2 lectures; 2 laboratories.

5–b. **Foods and Principles of Cookery.** A continuation of 4–a. Miss Reiner.

Prerequisite: Home Economics 4–a. Required of Sophomores in Home Economics. 4 credits: 2 lectures; 2 laboratories.

6–c. **Foods and Principles of Cookery.** A continuation of 5–b. Miss Reiner.

Prerequisite: Home Economics 5–b. Required of Sophomores in Home Economics. 4 credits: 2 lectures; 2 laboratories.

7–a. **Food Preparation.** This subject is to give a general knowledge of the processes of cookery. Miss Reiner.

Open to Sophomores, Juniors and Seniors not majoring in Home Economics. It does not satisfy prerequisites for any other subjects except Home Economics 8–b. 2 credits: 1 lecture; 1 laboratory.

8–b. Foods and Dietetics. A continuation of 7–a, stressing the dietetic value of foods. Miss Reiner.

Prerequisite: Home Economics 7–a. Open to Sophomores, Juniors and Seniors not majoring in Home Economics. It does not satisfy prerequisites for any other cookery subjects except Home Economics 9–c. 2 credits: 1 lecture; 1 laboratory.

9–c. Foods and Serving. A continuation of 8–b; and giving practice in preparing and serving meals. Miss Reiner.

Prerequisite: Home Economics 8–b. Open to Sophomores, Juniors and Seniors not majoring in Home Economics. It does not satisfy prerequisites for any other cookery subjects. 2 credits: 2 laboratories.

10–a. General Sewing. A subject in sewing opened to those not in the Home Economics course. The problems are individual but the sequence of them is planned with the instructor. Suggested projects are wash dress, wool skirt, wool dress, silk waist, tailored waist, middy. Miss Livingston.

Open to Sophomores, Juniors and Seniors. 3 credits: 1 lecture; 2 laboratories.

11–c. Drafting and Elementary Dressmaking. Practice given in drafting, cutting, fitting and designing of patterns; alteration and use of commercial patterns with application of these principles to the making of a cotton dress and a wool skirt. Students provide all materials subject to the approval of the instructor. Miss Livingston.

Prerequisites: Home Economics 2–b and 3–c; Drawing 24–b; Drawing 25–c. Required of Sophomores in Home Economics Teacher Training course. 3 credits: 3 laboratories; 2 hours outside.

12–a. Millinery. Designing and construction of frames; use of different materials in covering frames; making and placing of trimmings; renovating of materials and remodeling and trimming of old hats. All materials provided by students subject to the instructor's approval. Miss Livingston.

Elective for all Junior and Senior women. 2 credits: 2 laboratories.

13–a. Advanced Cookery. Comparative experimental work; modification of recipes; use of different temperatures, fats, leavening agents, and processes, with opportunity to judge results as a basis for scientific food preparation. Miss Reiner.

Prerequisites: Home Economics 6–c; Zoölogy 35–c. Required of Juniors in Home Economics. 2 credits: 2 laboratories.

14–b. Physiological Chemistry. This subject includes the study of the chemistry of cell structure and nutrition, and is the basis for a deeper and broader study of Nutrition and Dietetics. Miss Knight.

> Prerequisites: Home Economics 13–a; Chemistry 16–b. Required of Juniors in Home Economics in the Dietitian course.

15–b. Principles of Human Nutrition. Composition of the body; its relation to the physical universe. The composition, digestion, absorption, assimilation and oxidation of food stuffs. The physiological fuel value of food stuffs. Methods of investigation employed in the study of human nutrition. The food requirements of the body as influenced by activity, size, age, sex. Problems throughout the term. It is hoped that a trip to Boston may be included. Cost about $5. Miss Reiner.

> Prerequisites: Home Economics 9–a; Chemistry 15–a; and Chemistry 16–b as parallel subject; Zoölogy 35–c. Required of Juniors in Home Economics. 3 credits: 3 recitations.

16–c. Nutrition and Dietetics. Continuation of 15–b. Problems in dietary calculations. Comparative physiological values of foods. Application of the principles of human nutrition in the adaptation of diet to varying physiological, social and economic conditions. Miss Reiner.

> Prerequisite: Home Economics 15–b. Required of Juniors in Home Economics. 3 credits: 2 recitations; 1 laboratory.

17–b. Intermediate Dressmaking. Middy blouse; a silk waist; a made-over problem. This last is to be the renovating and remodeling of a suit or dress into a one-piece dress, or the remodeling of a waist and skirt. All materials provided by the student subject to the instructor's approval. Miss Livingston.

> Prerequisite: Home Economics 11–c. Required of Juniors in Home Economics Teacher Training course. 3 credits: 2 laboratories; 2 hours outside.

18–c. Draping and Advanced Dressmaking. The first problem is the designing, pattern modeling, cutting, fitting and draping on the dress form of an afternoon or party dress. Second problem,—lingerie waist, applying principles of hand sewing. Students provide all materials, subject to the approval of the instructor. Miss Livingston.

> Prerequisite: Home Economics 17–b. Elective only for Juniors in Home Economics who have the approval of the instructor as qualified to carry the work. 4 credits: 2 laboratories; 4 hours outside.

19–c. House Decoration. Application of theory of color and of design in house decoration. Selection of house furnishings; study of values; estimation of costs, and comparisons of sanitary and artistic furnishings. Miss Reiner.

Prerequisite: Drawing 25–c. Required of Juniors in Home Economics Teacher Training and Home Economics Institutional courses. 2 credits: 2 recitations.

20–c. House Management. A study of the organization of the home, of the principle involved in the care and management of it, in systematic methods of housekeeping, and in the apportionment of the income. Miss Knight.

Required of Juniors in Home Economics. 3 credits: 2 lectures; 1 laboratory.

21–a. Home Nursing. Scientific care of the patient under home conditions. Observation of symptoms. First aid. Mrs. Smith.

Prerequisite: Zoölogy 35–c. Required of Seniors in Home Economics Teacher Training course. 2 credits: 1 lecture; 1 laboratory.

22–a–b. Practice House. In this subject the actual work of carrying on a home is done in the Practice House under supervision. The girls in a family size group, approximately six, live in the house for a term of six weeks. Each resident student in rotation serves in the capacity of the different members of the family. As hostess the girl assumes all duties of the mother in planning, buying, preparing and serving the meals. The regular college work is carried during the time the girls are in the house. Miss Knight.

Prerequisites: Home Economics 20–c. Required of Seniors in Home Economics Teacher Training course. 3 credits.

24–a. Institutional Management. A study of the feeding of institutional groups, considering institutional equipment, organization, and laundering; buying, planning, preparing and serving of meals; methods of keeping records. Laboratory practice will be given in the College Commons. Expenses for trips approximately $10. Mrs. Smith.

Prerequisite: Home Economics 16–c. This subject is required of Seniors in Home Economics Institutional and Dietitian's courses. 4 credits: 2 lectures; 2 laboratories.

25–b. Institutional Management. Continuation of 24–a. Mrs. Smith.

Prerequisite: Home Economics 24–a. 4 credits: 2 lectures; 2 laboratories.

26–c. Institutional Practice. Nine weeks of practical work will be given in institutions of different types, such as cafeteria, dormitories,

etc. Students specializing in dietetics will be placed in hospitals as student dietitians.

Prerequisite: Home Economics 25–b. Required of Seniors in Home Economics Institutional and Home Economics Dietitian courses. 8 or 9 credits.

27–b. Special Methods. Teaching of Home Economics in elementary and secondary schools. Consideration of the place of Home Economics in education, study of the content and organization of courses, of text books, references, and equipment in cookery and clothing laboratories. Planning of courses of study and of lesson plans. Observation and discussion of classes. Miss Knight.

Prerequisite: Education 20–a. Required of Seniors in Home Economics Teacher Training course and open only to students in this course. 3 credits: 3 recitations.

28–c. Practice Teaching. Application of the principles of the Special Methods course. The work is done for a prescribed period, of approximately nine weeks, in high school Home Economics classes and under the supervision of the Special Methods teacher. Miss Knight.

Prerequisite: Home Economics 27–b. Required of Seniors in Home Economics Teacher Training course and open only to students in this course. 9 credits.

LANGUAGES

RICHARD WHORISKEY, *Professor*
JAMES H. MARCEAU, *Assistant Professor*
RUTH RICHARDSON, *Instructor*

FRENCH

1–a. Elementary French. Elements of French Grammar. Reading of simple stories; conversation and dictation. Assistant Professor Marceau.

3 credits: 3 recitations.

2–b. Elementary French. A continuation of 1–a. Assistant Professor Marceau.

Prerequisite: French 1–a. 3 credits: 3 recitations.

3–c. Elementary French. A continuation of 2–b. Assistant Professor Marceau.

Prerequisite: French 2–b. 3 credits: 3 recitations.

4–a. French Prose. Reading and translation; composition; outside reading. Professor Whoriskey, Assistant Professor Marceau.

Prerequisite: French 3–c. Freshmen who have offered French for admission are allowed to take French 4–a, French 5–b and French 6–c. 3 credits: 3 recitations.

5–b. French Prose. A continuation of 4–a. Professor Whoriskey and Assistant Professor Marceau.

Prerequisite: French 4–a. 3 credits: 3 recitations.

6–c. French Prose. A continuation of 5–b. Professor Whoriskey and Assistant Professor Marceau.

Prerequisite: French 5–b. 3 credits: 3 recitations.

***7–a. French Literature of the Nineteenth Century.** Selections from Hugo, Balzac, Sand, Dumas père, Daudet, Gautier. Composition. Assistant Professor Marceau.

Prerequisite: French 6–c. 3 credits: 3 recitations.

***8–b. French Literature of the Nineteenth Century.** A continuation of 7–a. Assistant Professor Marceau.

Prerequisite: French 7–a. 3 credits: 3 recitations.

***9–c. French Literature of the Nineteenth Century.** A continuation of 8–b. Assistant Professor Marceau.

Prerequisite: French 8–b. 3 credits: 3 recitations.

***10–a. French Literature of the Seventeenth Century.** Lives and works of the following: Corneille; Racine; Moliére; Bossuet; Boileau; Mme. de Sévigné; La Fontaine. Composition. Assistant Professor Marceau.

Prerequisite: French 9–c. 3 credits: 3 recitations.

***11–b. French Literature of the Seventeenth Century.** A continuation of 10–a. Assistant Professor Marceau.

Prerequisite: French 10–a. 3 credits: 3 recitations.

***12–c. French Literature of the Seventeenth Century.** A continuation of 11–b. Assistant Professor Marceau.

Prerequisite: French 11–b. 3 credits: 3 recitations.

13–a. French Composition and Conversation. Assistant Professor Marceau.

Prerequisite: French 3–c. Recommended for those desiring to teach. 3 credits: 3 recitations.

14–b. French Composition and Conversation. A continuation of 13–a. Assistant Professor Marceau.

Prerequisite: French 13–a. Recommended for those desiring to teach. 3 credits: 3 recitations.

*French 10–a, 11–b and 12–c will be given in 1919–1920 and in alternate years with French 7–a, 8–b and 9–c.

15–c. **French Composition and Conversation.** A continuation of 14–b. Assistant Professor Marceau.

Prerequisite: French 14–b. Recommended for those desiring to teach. 3 credits: 3 recitations.

SPANISH

1–a. **Elementary Spanish.** Elements of Spanish grammar. Reading of simple stories; conversation and dictation. Miss Richardson.

3 credits: 3 recitations.

2–b. **Elementary Spanish.** A continuation of 1–a. Miss Richardson.

Prerequisite: Spanish 1–a. 3 credits: 3 recitations.

3–c. **Elementary Spanish.** A continuation of 2–b. Miss Richardson.

Prerequisite: Spanish 2–b. 3 credits: 3 recitations.

4–a. **Spanish Prose.** Reading and translation, conversation, composition. Miss Richardson.

Prerequisite: Spanish 3–c. 2 credits: 2 recitations.

5–b. **Spanish Prose.** A continuation of 4–a. Miss Richardson.

Prerequisite: Spanish 4–a. 2 credits: 2 recitations.

6–c. **Spanish Prose.** A continuation of Spanish 5–b. Miss Richardson.

Prerequisite: Spanish 5–b. 2 credits: 2 recitations.

7–a. **Third-Year Spanish.** Readings from Cervantes, Calderon and other Spanish authors. Review of grammar. Dictation and composition, with emphasis on commercial usages. Miss Richardson.

Prerequisite: Spanish 6–c. 2 credits: 2 recitations.

8–b. **Third-Year Spanish.** A continuation of 7–a. Miss Richardson.

Prerequisite: Spanish 7–a. 2 credits: 2 recitations.

9–c. **Third-Year Spanish.** A continuation of 8–b. Miss Richardson.

Prerequisite: Spanish 8–b. 2 credits: 2 recitations.

GERMAN

1–a. **Elementary German.** Elements of German grammar. Reading of simple stories. Professor Whoriskey.

Required of Freshmen in Chemical Engineering who have not offered German for admission. 3 credits: 3 recitations.

2–b. Elementary German. A continuation of 1–a. Professor Whoriskey.

Prerequisite: German 1–a. Required of Freshmen in Chemical Engineering who have not offered German for admission. 3 credits: 3 recitations.

3–c. Elementary German A continuation of 2–b. Professor Whoriskey.

Prerequisite: German 2–b. Required of Freshmen in Chemical Engineering who have not offered German for admission. 3 credits: 3 recitations.

4–a. German Prose. Reading and translation. Professor Whoriskey.

Prerequisite: German 3–c or its equivalent. Freshmen who have offered German for admission are allowed to take German 4–a, 5–b, and 6–c. Required of Sophomores in Chemical Engineering. 3 credits: 3 recitations.

5–b. German Prose. A continuation of 4–a. Professor Whoriskey.

Prerequisite: German 4–a. Required of Sophomores in Chemical Engineering.

6–c. German Prose. A continuation of 5–b. Reading and translation of Hauff's Lichtenstein and similar books. Professor Whoriskey.

Prerequisite: German 5–b. 3 credits: 3 recitations.

***7–a. Goethe.** His life and works. The following books are read and criticized: 1. Hermann und Dorothea; 2. Iphigenie; 3. Torquato Tasso; 4. Egmont; 5. Götz von Berlichingen; 6. Dichtung u. Wahrheit (in part); 7. Die Leiden des jungen Werters; 8. Faust, Part I. Professor Whoriskey.

Prerequisite: German 6–c. 3 credits: 3 recitations.

***8–b. Goethe.** A continuation of 7–a. Professor Whoriskey.

Prerequisite: German 7–a. 3 credits: 3 recitations.

***9–c. Goethe.** A continuation of 8–b. Professor Whoriskey.

Prerequisite: German 8–b. 3 credits: 3 recitations.

***10–a. Schiller.** His life and works. The following books are read and criticized: 1. Wilhelm Tell; 2. Maria Stuart; 3. Die Jungfrau; 4. Die Braut von Messina; 5. Wallenstein; 6. Don Carlos; 7. Geschichte d. 30 jährigen Krieges; 8. Ballads. Professor Whoriskey.

Prerequisite: German 6–c. 3 credits: 3 recitations.

***11–b. Schiller.** A continuation of 10–a. Professor Whoriskey.

Prerequisite: German 10–a. 3 credits: 3 recitations.

* German 10–a, 11–b, 12–c were given in 1918–1919; German 13–a, 14–b and 15–c will be given in 1919–1920 and German 7–a, 8–b and 9–c in 1920–1921.

*12–c. **Schiller.** A continuation of 11–b. Professor Whoriskey.

Prerequisite: German 11–b. 3 credits: 3 recitations.

*13–a. **Sudermann.** The following books are read and criticized: 1. Frau Sorge; 2. Der Katzensteg; 3. Teja; 4. Heimat; 5. Johannes; 6. Frenssen's Jörn Uhl. Professor Whoriskey.

Prerequisite: German 6–c. 3 credits: 3 recitations.

*14–b. **Sudermann and his Contemporaries.** A continuation of 13–a. Professor Whoriskey.

Prerequisite: German 13–a. 3 credits: 3 recitations.

*15–c. **Sudermann and his Contemporaries.** A continuation of 14–b.

Prerequisite: German 14–b. 3 credits: 3 recitations.

*16–c. **Scientific German.** Professor Whoriskey.

Required of Sophomores in Chemical Engineering. 3 credits: 3 recitations.

LATIN

1–a. **Livy (Book I).**

Elective for students who have offered Advanced Latin for entrance. 3 credits: 3 recitations.

2–b. **Livy (Book I).** A continuation of Latin 1–a.

Prerequisite: Latin 1–a. 3 credits: 3 recitations.

3–c. **Horace (Odes and Epodes).**

Prerequisite: Latin 1–a. 3 credits: 3 recitations.

METEOROLOGY AND ASTRONOMY

CHARLES H. PETTEE, *Professor*

1–b. **Meteorology.** Lectures and quizzes on wind systems, precipitation, humidity, laws of storms and tornadoes, and methods of prediction of atmospheric changes. Professor Pettee.

Prerequisite: Physics 2. Required of Seniors in Agriculture. 3 credits: 2 lectures; 1 recitation.

1–a. **Astronomy.** A short cultural subject designed to give the student a simple explanation of the many phenomena constantly exhibiting themselves in the universe and to acquaint him with the present state of astronomic science. Professor Pettee.

Elective for Juniors and Seniors. 3 credits: 3 recitations.

[POLITICAL SCIENCE—see Department of History and Political Science, page 111.]

* German 12–c was given in 1918–1919; German 13–a, 14–b and 15–c will be given in 1919–1920.

SOCIOLOGY

ERNEST R. GROVES, *Professor*
VICTOR W. BENNETT, *Instructor*

1-a. **Introduction to Sociology.** The nature of society, its laws, organizations and principles of progress. Mr. Bennett.

Elective for Sophomores. 3 credits: 3 recitations.

2-c. **Urban Community Sociology.** A study of the social history of urban civilization, with special emphasis upon the problems and progress of American cities. Recitations and reports. Mr. Bennett.

Elective for Sophomores. 3 credits: 3 recitations.

3-a. **Social Pathology and Modern Philanthropy. Poverty.** The study of causes of poverty, its relief and the contemporary problems related to it as reported in "The Survey." Professor Groves.

Elective for Juniors. 3 credits: 3 recitations.

4-b. **Social Pathology and Modern Philanthropy. Crime.** The study of the causes of crime, its treatment and the contemporary problems related to it as reported in "The Survey." Professor Groves.

Elective for Juniors. 3 credits: 3 recitations.

5-c. **Rural Community Sociology.** A study of the social significance, conditions and resources of American country life with the purpose of developing community leadership. Lectures and recitations. Professor Groves.

Elective for Juniors. 3 credits: 3 recitations.

6-a. **Evolution of Social Altruism.** A study of the history of social idealism among the English-speaking peoples. Lectures and reports. Professor Groves.

Prerequisites: Any three subjects in Sociology. Elective for Seniors. 3 credits: 3 recitations.

7-b. **An Introduction to General Sociology.** An advanced subject in the principles of sociology which aims to introduce the student to a systematic sociological interpretation of human association. A seminar course. Professor Groves.

Prerequisites: Any four subjects in Sociology. Elective for Seniors. 3 credits: 3 recitations.

8-c. **Sociological Research.** This subject provides the student opportunity for individual investigations of sociological problems. Problems. Reports. Professor Groves.

Prerequisites: Any five subjects in Sociology. Elective for Seniors. 3 credits: 3 recitations.

[**PSYCHOLOGY**—See department of Education and Psychology—page 104.]

ZOÖLOGY

C. Floyd Jackson, *Professor*
Alma Drayer Jackson, *Instructor*
—— ——, *Instructor*

Courses in the Department of Zoölogy are divided as follows:

Group A is primarily for Arts and Science students, pre-medical students and those majoring in Zoölogy. Students from other courses may, however, elect from this group, provided they have the proper prerequisites.

Group B includes the required courses in Agriculture and Home Economics, as well as certain other electives for either Agriculture, Home Economics or Arts and Science students.

Group A. Arts and Science Subjects

1–a. **Principles of Zoölogy.** An elementary study of the principles of life, its development, structural basis and physiological activity. The subject is continuous throughout the year. This subject is intended to give a practical knowledge of animal life and is required of all pre-medical students and others intending to major in the Department of Zoölogy. Students are strongly advised to carry the laboratory work (Zoölogy 4–a, 5–b, and 6–c) parallel with this subject. Professor Jackson.

3 credits: 3 lectures.

2–b. **Principles of Zoölogy.** A continuation of 1–a. Professor Jackson.

Prerequisite: Zoölogy 1–a. Elective for Freshmen. 3 credits: 3 lectures.

3–c. **Principles of Zoölogy.** A continuation of 2–b. Professor Jackson.

Prerequisite: Zoölogy 2–b. Elective for Freshmen. 3 credits: 3 lectures.

4–a. **Elementary Laboratory.** Laboratory exercises for the purpose of demonstrating the principles discussed in Zoölogy 1–a, 2–b and 3–c. A much clearer conception of life phenomena will be gained if the laboratory work is carried parallel to the lectures. Professor Jackson.

Prerequisite: Zoölogy 1–a, carried as a parallel subject. Required of all students majoring in Zoölogy. Elective for Freshmen. 1 credit: 1 laboratory.

5–b. **Elementary Laboratory.** A continuation of 4–a. Professor Jackson.

Prerequisite: Zoölogy 4–a; and Zoölogy 2–b, carried as a parallel subject. Elective for Freshmen. 1 credit: 1 laboratory.

6–c. Elementary Laboratory. A continuation of 5–b. Professor Jackson.

Prerequisites: Zoölogy 5–b; and Zoölogy 3–c, carried as a parallel subject. Elective for Freshmen. 1 credit: 1 laboratory.

7–a. Comparative Physiology. A detailed study of human anatomy and physiology, compared briefly with the anatomy and physiology of lower animals. This subject is intended to give a practical knowledge of the human mechanism and its method of operation. Students are strongly advised to carry the laboratory work (Zoölogy 10–a, 11–b and 12–c) parallel with this subject. Professor Jackson.

Prerequisite: Zoölogy 3–c. Required of all pre-medical students. Elective for Sophomores. 3 credits: 3 lectures.

8–b. Comparative Physiology. A continuation of 7–a. Professor Jackson.

Prerequisite: Zoölogy 7–a. Elective for Sophomores. 3 credits: 3 lectures.

9–c. Comparative Physiology. A continuation of 8–b. Professor Jackson.

Prerequisite: Zoölogy 8–b. Elective for Sophomores. 3 credits: 3 lectures.

10–a. Physiological Laboratory. Laboratory exercises for the purpose of demonstrating the principles in Comparative Physiology (Zoölogy 7–a, 8–b and 9–c). The laboratory work should be carried parallel with the lectures when possible. Professor Jackson and Mr. ——.

Prerequisite: Zoölogy 7–a, carried as a parallel subject. Elective for Sophomores. 1 credit: 1 laboratory.

11–b. Physiological Laboratory. A continuation of 10–a. Professor Jackson and Mr. ——.

Prerequisites: Zoölogy 10–a; and Zoölogy 8–b, carried as a parallel subject. Elective for Sophomores. 1 credit: 1 laboratory.

12–c. Physiological Laboratory. A continuation of 11–b. Professor Jackson and Mr. ——.

Prerequisites: Zoölogy 11–b; and Zoölogy 9–c, carried as a parallel subject. Elective for Sophomores. 1 credit: 1 laboratory.

13–a. Hygiene and Sanitation. A detailed study of the principles of health preservation. This subject is continuous throughout the year and should, if possible, be preceded by work in Physiology, although that subject is not a prerequisite. Professor Jackson.

Prerequisite: Zoölogy 3–c. Elective for Sophomores and Juniors. 3 credits: 3 lectures.

14–b. Hygiene and Sanitation. A continuation of 13–a. Professor Jackson.

Prerequisite: Zoölogy 13–a. Elective for Sophomores and Juniors. 3 credits: 3 lectures.

15–c. Hygiene and Sanitation. A continuation of 14–b. Professor Jackson.

Prerequisite: Zoölogy 14–b. Elective for Sophomores and Juniors. 3 credits: 3 lectures.

16–a. Evolution and Genetics. Lectures and assignments dealing with the various problems of evolution and their relation to human life. Work in evolution should, if possible, be preceded by a study of Comparative Physiology (Zoölogy 7–a, 8–b, and 9–c). Professor Jackson.

Prerequisite: Zoölogy 3–c. Elective for Juniors and Seniors. 3 credits: 3 lectures.

17–b. Evolution of Man. A continuation of 16–a. Lectures and assignments dealing with the origin and development of man and the problem of man's antiquity. Evidence of man's origin based on anatomical, embryonic and paleontological data will be discussed. A special emphasis will be given to the racial identity, origin and derivation of the English-speaking people. Professor Jackson.

Prerequisites: Zoölogy 16–a. Elective for Juniors and Seniors. 3 credits: 3 lectures.

18–c. Faunal Zoölogy. A study of the habits, life history and identification of local vertebrate animals with a special reference to the birds.

The object of this subject is to enable the student to identify common animals at sight and to become familiar with their habits and economic importance. The subject is intended for nature study directors, or others interested in the identification of common forms. Professor Jackson.

Prerequisite: Zoölogy 3–c. 3 credits: 2 lectures; 1 laboratory.

19–a. Advanced Zoölogy. Arranged to suit the need of students who wish to specialize in Zoölogy. Professor Jackson.

Prerequisites: This subject may not be elected except by students who have completed at least 18 hours in Zoölogy or Entomology with an average grade of at least 80; and then only on the presentation of a detailed outline of the problems they wish to study. The subject is primarily for graduate students. Open only to students by special permission. Credit and hours to be arranged.

20–b. Advanced Zoölogy. A continuation of 19–a. Professor Jackson.

Prerequisites: The same as for Zoölogy 19–a. Credit and hours to be arranged.

21–c. Advanced Zoölogy. A continuation of 20–b. Professor Jackson.

Prerequisites: The same as for Zoölogy 19–a. Credit and hours to be arranged.

Group B. Agricultural and Home Economics Subjects

30–a. General Zoölogy. A detailed study of the fundamental principles of life; the nature and physiology of protoplasm; the structure of the cell and the processes of cell division. The structure and physiology of man will be discussed in detail. There will then follow a discussion of the structure, habits, physiology and life history of the different types of animals. The economic aspect of this study will be emphasized so far as possible and its importance and relation to man. The laboratory work will consist of the study and dissection of type forms. Mrs. Jackson and Mr. ——.

Required of Freshmen in Agriculture. Open only to students of this division. 3 credits: 2 lectures; 1 laboratory.

31–b. General Zoölogy. A continuation of 30–a. Mrs. Jackson and Mr. ——.

Prerequisite: Zoölogy 30–a. Required of Freshmen in Agriculture. Open only to students of this division. 3 credits: 2 lectures; 1 laboratory.

32–c. General Zoölogy. A continuation of 31–b. Mrs. Jackson and Mr. ——.

Prerequisite: Zoölogy 31–b. Required of Freshmen in Agriculture. Open only to students of this division. 3 credits: 2 lectures; 1 laboratory.

33–a. Elementary Physiology and Hygiene. A general survey of the structure and function of the human body, with a study of the fundamental principles of hygiene as applied to the different systems. Collateral readings, written reports and conferences required. Mrs. Jackson.

Required of Sophomores in Home Economics. Open only to students in this course. 3 credits: 2 lectures; 1 laboratory.

34–b. Elementary Physiology and Hygiene. A continuation of 33–a. Mrs. Jackson.

Prerequisite: Zoölogy 33–a. Required of Sophomores in Home Economics. Open only to students in this course. 3 credits: 2 lectures; 1 laboratory.

35–c. **Elementary Physiology and Hygiene.** A continuation of 34–b. Mrs. Jackson.

Prerequisite: Zoölogy 34–b. Required of Sophomores in Home Economics. Open only to students in this course. 3 credits: 2 lectures; 1 laboratory.

*36–a. **Histology.** A detailed study of the structure of the tissues of vertebrate animals, cell specialization and the manner in which tissues are combined into organs. The subject is primarily for students intending to teach Zoölogy, a great deal of attention being paid to preparing microscope slides and general histological technique. Mrs. Jackson.

Prerequisite: Zoölogy 3–c or 35–c. Elective for Juniors and Seniors in Arts and Science. 3 credits: 1 lecture; 2 laboratories.

*37–b. **Histology.** A continuation of 36–a. Mrs. Jackson.

Prerequisites: Zoölogy 3–c and 36–a, or Zoölogy 35–c and 36–a. Elective for Juniors and Seniors. 3 credits: 1 lecture; 2 laboratories.

*38–c. **Histology.** A continuation of 37–b. Mrs. Jackson.

Prerequisites: Zoölogy 3–c and 37–b, or Zoölogy 35–c and 37–b. Elective for Juniors and Seniors. 3 credits: 1 lecture; 2 laboratories.

39–a. **Embryology.** A detailed study of the vertebrate embryo, its method of development, and the relation of the embryo to the parent. The work will be prefaced by the study of the details of cell structure, oögenesis, spermatogenesis, fertilization and segmentation; thus tracing the gradual development of the embryo from the single cell to maturity. The laboratory work will be primarily with the frog and chick embryo. The lectures will include human embryology. Mrs. Jackson.

Prerequisites: Zoölogy 3–c or 35–c. Elective for Juniors and Seniors. 3 credits: 2 lectures; 1 laboratory.

*40–b. **Embryology.** A continuation of 39–a. Mrs. Jackson.

Prerequisite: Zoölogy 39–a. Elective for Juniors and Seniors. 3 credits: 2 lectures; 1 laboratory.

*41–c. **Embryology.** A continuation of 40–b. Mrs. Jackson.

Prerequisite: Zoölogy 40–b. Elective for Juniors and Seniors. 3 credits: 2 lectures; 1 laboratory.

*42–a. **Physiology of Nutrition.** An advanced subject in the nature and physiology of nutrition. The anatomy and physiology of the alimentary tract and the allied organs of digestion will be discussed in

*Given in alternate years: Zoölogy 36–a, 37–b, and 38–c given in 1919–1920; Zoölogy 39–a, 40–b and 41–c given in 1920–1921

detail. The work will consist of lectures, assigned topics and laboratory experiments on digestion. Mrs. Jackson.

> Prerequisite: Open only to Juniors and Seniors having at least 9 hours credit in Zoölogy. Elective for Juniors and Seniors. 3 credits: 2 lectures; 1 laboratory.

43-b. Physiology of Circulation and Respiration. An advanced subject in the nature and physiology of the organs of circulation and respiration. The subject will consist of lectures, assigned topics and laboratory experiments on the circulatory and respiratory processes within the body. Mrs. Jackson.

> Prerequisite: Open only to Juniors and Seniors having at least 9 hours credit in Zoölogy. Elective for Juniors and Seniors. 3 credits: 2 lectures; 1 laboratory.

44-c. Advanced Neurology. A study of the structure and physiology of the human nervous system. The laboratory work will consist of a study of the different types of neurons, the nature of nervous impulses, and a detailed study of the nerve tracts in the brain and spinal cord. The structure, and physiology of the sense organs will also be considered. Mrs. Jackson.

> Prerequisite: Open only to Juniors and Seniors having at least 9 hours credit in Zoölogy. Elective for Juniors and Seniors. 3 credits: 2 lectures; 1 laboratory.

ENGINEERING DIVISION

CHARLES E. HEWITT, *Dean*

DEPARTMENTS

ARCHITECTURE AND DRAWING	MECHANICAL ENGINEERING
CHEMISTRY	MINERALOGY
ELECTRICAL ENGINEERING	PHYSICS
MATHEMATICS	SHOPS

ARCHITECTURE AND DRAWING

ERIC T. HUDDLESTON, *Professor*
THOMAS J. LATON, *Assistant Professor*
PAUL H. SHRAMM, *Instructor*

These subjects are of an industrial and cultural nature and include the engineering, architectural and industrial-art branches of the subject, adapted to meet the utilitarian requirements of the several departments of the College.

Partial credit may be given for work done in preparatory schools if the work is satisfactory to the department. In order to get credit, the student must submit for examination the work done in the preparatory school. No college credit will be given for work submitted for entrance.

Students are advised not to purchase drawing materials before consultation with the drawing instructor. Instruments will be loaned to students upon a deposit, except that engineering and construction students must provide their own instruments at the beginning of their sophomore year.

1-a. **Engineering Drawing.** A study is made of the fundamentals of engineering drawing, including free-hand lettering, the use of drawing instruments, and the solution of drafting problems in orthographic projection. Text: "Engineering Drawing" by French. Assistant Professor Laton.

> Required of Freshmen in Electrical, Mechanical, Mechanic Arts and Construction courses. 3 credits: 3 drawing periods.

2-b. **Machine Drawing.** A continuation of 1-a, taking up the study of isometric, oblique, axiometric and other systems of pictorial drawing with reference to their use in the sketching of machine parts; the study of various types of fastenings (bolts, screws, rivets, etc.);

drafting room methods as applied to commercial practice; tracing and blue-printing. Assistant Professor Laton.

Prerequisite: Drawing 1–a. Required of Freshmen in Electrical, Mechanical, Mechanic Arts and Construction courses. 3 credits: 3 drawing periods.

3–c. **Machine Drawing.** A continuation of 2–b, including the representation of machine and structural parts. Drawings are made from sketches and from the original machines, with individual problems in commercial machine drawing to conform to specified requirements. Assistant Professor Laton.

Prerequisite: Drawing 2–b. Required of Freshmen in Electrical, Mechanical, Mechanic Arts and Construction courses. 3 credits: 3 drawing periods.

4–a. **Descriptive Geometry.** An application of the principles of descriptive geometry to the solution of problems in points, lines, planes and solids. Assistant Professor Laton.

Prerequisite: Drawing 3–c. Required of Sophomores in Electrical, Mechanical, Mechanic Arts and Construction courses. 3 credits: 3 drawing periods.

5–a. **Mechanical Drawing.** A study of the fundamentals of mechanical drawing, including free-hand lettering, the use of drawing instruments, and a brief study of orthographic and isometric projection. Mr. Shramm.

Required of Freshmen in Chemical Engineering. 2 credits: 2 drawing periods.

10–c. **Agricultural Drawing.** Instruction in this subject includes drafting room exercises in free-hand lettering; the use of drawing instruments; a brief study of orthographic and isometric projection; together with the drawing of plans and elevations of simple farm structures. Assistant Professor Laton.

Required of Freshmen in Agriculture. 3 credits: 3 drawing periods.

20–a. **Home Economics Drawing.** Instruction is given in free-hand lettering, the use of drawing instruments, and the rudiments of orthographic and isometric projection drawing. This is followed by drafting room exercises in architectural representation as a preparation for further study in house planning. Professor Huddleston.

Required of Freshmen in Home Economics. 2 credits: 2 drawing periods.

21–b. **House Planning.** Lectures and recitations devoted to a brief study of the history of domestic architecture; the relation of the house plan to home making and to the individual family; its relation

to the individual site, to the garden, to accessory buildings, and to the community; supplemented by drafting room exercises devoted to an analytical study of house plans. Professor Huddleston.

Prerequisite: Drawing 20–a. Required of Freshmen in Home Economics. 2 credits: 1 lecture; 1 drawing period.

22–c. **House Structure.** A continuation of Drawing 21–b, taking up the study of an individual building problem, making working drawings for a small frame house designed by the student to conform to specified requirements. Professor Huddleston.

Prerequisite: Drawing 21–b. Required of Freshmen in Home Economics. 2 credits: 2 drawing periods.

23–a. **Elementary Design.** Studio exercises in the fundamentals of design, for the purpose of developing the student's ability to draw. Studies in pencil, pen and ink, and brush of lines, space arrangement, proportion of line and form, symmetry and balance, and their adaptation to motifs for decoration according to the laws of beauty, harmony and construction. Mr. Shramm.

Required of Sophomores in Home Economics. 2 credits: 2 drawing periods.

24–b. **Costume Design.** Studio exercises in pencil, pen and ink and brush devoted to an analytical study of historic ornament, flower and plant forms, and the human figure, in their application to costume design; studio methods in rendering draperies, fur, silk, velvet, lace and other textiles. Mr. Shramm.

Prerequisite: Drawing 23–a. Required of Sophomores in Home Economics. 2 credits: 2 drawing periods.

25–c. **Decorative Design.** Lectures throughout the term on color theories, harmonies, and qualities based on spectral colors, supplemented with studio work in different mediums, thereby giving practice in tinting, contrasting and harmonizing colors; stenciling, etc.; the application of these studies to costume design and interior decoration. Professor Huddleston and Mr. Shramm.

Prerequisite: Drawing 24–b. Required of Sophomores in Home Economics. 2 credits: 1 lecture; 1 drawing period.

*30–a, b, c. **Free-hand Drawing.** Studio exercises in the elements of design, leading to construction of units, motifs, and simple forms of ornament; a study of the principles of arrangement, proportion of line and form, symmetry and balance, according to the laws of beauty, harmony and construction. Mr. Shramm.

3 credits: 3 drawing periods.

*NOTE:—The object of such subject as Drawing 30 is not only to develop the utilitarian ideas involved in industrial and commerical art, but also to cultivate an appreciation and love of the beautiful in nature and art.

***31-a, b, c. Advanced Free-hand Drawing.** Studio exercises in pencil, charcoal, pen and ink, and brush from plaster casts of the human form, plant and flower form, and from nature; in short, a study in perspective, light and shadow construction as involved in commercial design —such as posters, book-covers, textiles, wall paper, metal and jewelry design, etc. Mr. Shramm.

Prerequisite: Drawing 30. 3 credits: 3 drawing periods.

***32-a, b, c. Advanced Drawing Composition.** Studio work adapted to the needs and ability of the individual student, either along lines of pure design, or taking up any of the industrial or commercial phases of the subject. Mr. Shramm.

Prerequisite: Drawing 31. 3 credits: 3 drawing periods.

40-a. Architectural Drawing. Drafting room exercises in architectural representation, followed by an analytical study of house plans and modern methods of building construction. Professor Huddleston.

Prerequisites: Drawing 102-b, Shop 10-c. Required of Juniors in Mechanic Arts. 3 credits: 3 drawing periods.

41-b. Architectural Drawing. A continuation of 40-a, taking up the study of an individual building problem, making working drawings for a small frame house designed by the student to conform to specified requirements. Professor Huddleston.

Prerequisite: Drawing 40-a. Required of Juniors in Mechanic Arts. 3 credits: 3 drawing periods.

102-b. Industrial Arts Drawing. Studio work in free-hand perspective as applied to making working sketches of wood joints, furniture and machine parts; a study of the principles of design suited to the mechanic arts, involving design studies for door and cabinet paneling, metal parts, hinges, escutcheons, draw pulls, etc. Mr. Shramm.

Required of Sophomores in Mechanic Arts and Construction courses. 3 credits: 3 drawing periods.

103-c. Elements of Architecture. Drafting room exercises in the study of the classic orders of architecture, and elementary studies in composition. Professor Huddleston.

Prerequisite: Drawing 102-b. Required of Sophomores in Mechanic Arts and Construction courses. 3 credits: 3 drawing periods.

* NOTE:—The object of such subjects as Drawing 31 and 32 is not only to develop the utilitarian ideas involved in industrial and commercial art, but also to cultivate an appreciation and love of the beautiful in nature and art.

104–a. **Architectural Drawing.** Drafting room exercises in architectural representation, followed by an analytical study of house plans and modern methods of building construction. Professor Huddleston.

Prerequisite: Drawing 102–b. Required of Juniors in Architectural Construction. 3 credits: 3 drawing periods.

105–b. **Architectural Drawing.** A continuation of 104–a, taking up the study of an individual building problem, making working drawings for a small frame house designed by the student to conform to specified requirements. Professor Huddleston.

Prerequisite: Drawing 104–a. Required of Juniors in Architectural Construction. 3 credits: 3 drawing periods.

106–c. **Architectural Drawing.** A continuation of 105–b, developing interior and exterior scale and full-size details. Professor Huddleston.

Prerequisite: Drawing 105–b. Required of Juniors in Architectural Construction. 3 credits: 3 drawing periods.

107–b. **Building Construction.** Conferences, text-book study and drafting room exercises in a comprehensive study of details of wood and masonry construction and their application to modern building construction. Professor Huddleston and Mr. ——.

Prerequisites: Drawing 4–a, Mechanical Engineering 103–a. Required of Juniors in Architectural Construction. 4 credits: 1 lecture; 3 drawing periods.

108–c. **Building Construction.** A continuation of 107–b, taking up construction details of reinforced concrete and steel. Professor Huddleston and Mr. ——.

Prerequisite: Drawing 107–b. Required of Juniors in Architectural Construction. 4 credits: 1 lecture; 3 drawing periods.

109–a. **Building Construction and Design.** Graded problems in structural design of buildings in wood and masonry, giving special consideration to mill-construction. Professor Huddleston and Mr. ——.

Prerequisite: Drawing 108–c. Required of Seniors in Architectural Construction. 8 credits: 8 drawing periods.

110–b. **Building Construction and Design.** A continuation of 109–a, taking up the design of buildings of reinforced concrete and steel construction. Professor Huddleston and Mr. ——.

Prerequisite: Drawing 109–a. Required of Seniors in Architectural Construction. 8 credits: 8 drawing periods.

111–c. **Architectural Thesis.** A thesis will be required of each student, consisting of a set of original working drawings, complete in details and specifications, for a public building designed to meet certain

specified conditions. This work must be done in the drafting room of the department and under the supervision of the instructor. Professor Huddleston and Mr. ——.

Prerequisite: Drawing 110-b. Required of Seniors in Architectural Construction. 8 credits: 8 drawing periods.

112-c. **Contracts and Specifications.** This subject comprises discussions of the principles and form of building contracts and standard specifications; study of the legal relation of the architect, the owner and the contractor; state laws concerning the erection of public buildings; labor laws, lien laws; building permits; building insurance; contracts and bonds. Professor Huddleston.

Required of Seniors in Architectural Construction. 1 credit: 1 recitation.

CHEMISTRY

CHARLES JAMES, *Professor*
GEORGE A. PERLEY, *Associate Professor*
OLUS J. STEWART, *Assistant Professor*
MELVIN M. SMITH, *Instructor*
HEMAN C. FOGG, *Instructor*

1-a. **Inorganic Chemistry.** Lectures and recitations on general and theoretical chemistry, illustrated by experiments, charts, specimens, lantern views, etc. Solution of chemical problems will be required. Professor James and Associate Professor Perley.

Required of Freshmen in Agriculture and Engineering. 3 credits: 2 lectures; 1 recitation.

2-b. **Inorganic Chemistry.** A continuation of 1-a. Professor James and Associate Professor Perley.

Prerequisite: Chemistry 1-a. Required of Freshmen in Agriculture and Engineering. 3 credits: 2 lectures; 1 recitation.

3-c. **Inorganic Chemistry.** A continuation of 2-b, but the time will be spent upon the metallic elements, their metallurgy, salts, etc. Professor James and Associate Professor Perley.

Prerequisite: Chemistry 2-b. Required of Freshmen in Agriculture and Engineering. 3 credits: 2 lectures; 1 recitation.

4-c. **Qualitative Analysis.** Laboratory practice, with occasional lectures and recitations. The student is expected to become proficient in the separation and detection of the common acids and bases, and to keep a full set of notes. Mr. Smith.

Prerequisite: Chemistry 2-b. Required of Freshmen in Chemistry. 3 credits: 3 laboratories.

5–c. Qualitative Analysis. Similar to Chemistry 4–c, but modified to suit students in Agriculture. Mr. Smith.

Prerequisite: Chemistry 2–b. Required of Freshmen in Agriculture. 3 credits: 3 laboratories.

6–a. Inorganic Chemistry. Similar to Chemistry 1–a. Mr. Smith.

Required of Freshmen in Home Economics. 4 credits: 3 recitations; 1 laboratory.

7–b. Inorganic Chemistry. Continuation of 6–a. Mr. Smith.

Prerequisite: Chemistry 6–a. Required of Freshmen in Home Economics. 4 credits: 3 recitations; 1 laboratory.

8–c. Inorganic Chemistry. Continuation of 7–b. Mr. Smith.

Prerequisite: Chemistry 7–b. Required of Freshmen in Home Economics. 4 credits: 3 recitations; 1 laboratory.

9–a. Qualitative Analysis. A continuation of 4–c, together with more advanced work upon insoluble substances, etc. Mr. Smith.

Prerequisite: Chemistry 4–c. Required of Sophomores in Chemistry. 3 credits: 3 laboratories.

10–a. Qualitative Analysis. Laboratory work with occasional lectures and recitations. The work covered includes the detection of the more familiar acids and bases both in simple and complex mixtures. Mr. Smith and Mr. Fogg.

Prerequisite: Chemistry 3–c. Required of students in Chemical Engineering. 6 credits: 6 laboratories.

11–a. Qualitative Analysis. Similar to Chemistry 4–c, but adapted to the use of students in Electrical and Mechanical Engineering. Mr. Smith and Mr. Fogg.

Prerequisite: Chemistry 2–b. 3 credits: 3 laboratories.

12–b. Qualitative Analysis. A continuation of 11–a. Mr. Smith and Mr. Fogg.

Prerequisite: Chemistry 11–a. 3 credits: 3 laboratories.

13–a. Quantitative Analysis. Introduction to quantitative analysis, consisting of the analyses of simple compounds and materials such as feeds, fertilizers, soils, water, etc. Assistant Professor Stewart.

Prerequisites: Chemistry 3–c and 5–c. Required of Sophomores in Agriculture. 2 credits: 2 laboratories.

14–b. Quantitative Analysis. Continuation of 13–a. Assistant Professor Stewart.

Prerequisite: Chemistry 13–a. 2 credits: 2 laboratories.

15–a. Organic Chemistry. A study of the more important organic compounds from the viewpoint of the Home Economics student. Mr. Fogg.

Prerequisite: Chemistry 8–c. Required of Sophomores in Home Economics. 2 credits: 2 recitations.

16–b. Organic Chemistry. Continuation of 15–a. Mr. Fogg.

Prerequisite: Chemistry 15–a. 2 credits: 2 recitations.

17–a. Inorganic Preparations. Laboratory work upon the preparation of pure salts. Associate Professor Perley.

Prerequisite: Chemistry 9–a. Required of Sophomores in Chemistry. 2 credits: 2 laboratories.

18–b. Quantitative Analysis. A preliminary study of quantitative analysis to familiarize the student with the general methods of chemical manipulation and analysis. Assistant Professor Stewart.

Prerequisites: Chemistry 3–c; Mathematics 2–a and 3–b. Required of students in Chemistry. Elective for Sophomores, Juniors and Seniors in Arts and Science, provided laboratory facilities permit. 5 credits: 5 laboratories.

19–c. Quantitative Analysis. A continuation of 18–b. Assistant Professor Stewart.

Prerequisite: Chemistry 18–b. Required of students in Chemistry. 7 credits: 7 laboratories.

20–a. Organic Chemistry. Lectures and recitations. A study of the chemistry of the carbon compounds. Professor James.

Prerequisite: Chemistry 3–c. Required of Sophomores in Chemistry. 2 credits: 2 lectures.

21–b. Organic Chemistry. A continuation of 20–a. Professor James.

Prerequisite: Chemistry 20–a. Required of Sophomores in Chemistry. 3 credits: 3 lectures.

22–c. Organic Chemistry. A continuation of 21–b. Professor James.

Prerequisite: Chemistry 21–b. Required of Sophomores in Chemistry. 3 credits: 3 lectures.

23–a. Household Chemistry. This subject treats of the chemistry of foods, beverages, baking chemicals, preservatives and detergents. Associate Professor Perley.

Prerequisite: Chemistry 8–c. Required of Juniors in Home Economics. 3 credits: 1 lecture; 2 laboratories.

*24–a–c. **Organic Chemistry Laboratory.** The work in this subject consists mainly of laboratory practice in preparing and purifying organic compounds. Lectures and recitations will be held from time to time in connection with the practice. Associate Professor Perley.

Prerequisite: Chemistry 22–c. Required of Juniors in Chemistry. 2 credits: 2 laboratories.

25–b. **Organic Chemistry Laboratory.** A continuation of Chemistry 24–a. Associate Professor Perley.

Prerequisite: Chemistry 22–c. Required of Juniors in Chemistry. 2 credits: 2 laboratories.

26–a. **Advanced Quantitative Analysis.** Assistant Professor Stewart

Prerequisite: Chemistry 19–c. Required of students in Chemistry. 4 credits: 4 laboratories.

27–b. **Advanced Quantitative Analysis.** A continuation of 26–a. Assistant Professor Stewart.

Prerequisite: Chemistry 26–a. Required of students in Chemistry. 4 credits: 4 laboratories.

28–c. **Advanced Quantitative Analysis.** A continuation of 27–b. Assistant Professor Stewart.

Prerequisite: Chemistry 27–b. Required of students in Chemistry. 4 credits: 4 laboratories.

29–a. **Physical Chemistry.** Advanced study of chemical theory. Practical experiments will be performed in the determination of vapor density, molecular weights, specific heat, etc.; and the study of isomorphism, diffusion of gases, solutions, ionization, electrolysis, molecular and atomic volume, thermo chemistry, equilibrium, the phase rule, etc., will take up much of the time. Associate Professor Perley.

Prerequisite: Chemistry 3–c. Required of Juniors in Chemistry. 3 credits; 3 lectures.

30–b. **Physical Chemistry.** A continuation of 29–a. Associate Professor Perley.

Prerequisite: Chemistry 29–a. Required of Juniors in Chemistry. 3 credits: 3 lectures.

31–c. **Physical Chemistry.** A continuation of 30–b. Associate Professor Perley.

Prerequisite: Chemistry 30–b. Required of Juniors in Chemistry. 3 credits: 3 lectures.

* Given as 24–c for students in the Arts course in Chemistry.

32–a. Advanced Inorganic Chemistry. Mainly a review. Professor James.

Prerequisite: Chemistry 3–c. Required of Seniors in the Arts and Science course in Chemistry. Elective for Students in Chemical Engineering. 3 credits: 3 lectures.

33–b. Advanced Inorganic Chemistry. An introduction to the rare elements. Professor James.

Prerequisite: Chemistry 32–a. Required of Seniors in the Arts and Science course in Chemistry. Elective for students in Chemical Engineering. 3 credits: 3 lectures.

34–c. Advanced Inorganic Chemistry. A continuation of 33–b, together with certain special subjects. Professor James.

Prerequisite: Chemistry 33–b. Elective for students in Chemical Engineering. 3 credits: 3 lectures.

35–a. Industrial Chemistry. Associate Professor Perley.

Prerequisite: Chemistry 3–c. Required of students in Chemical Engineering. Elective for students in the Arts and Science course in Chemistry. 3 credits: 3 lectures.

36–b. Industrial Chemistry. A continuation of 35–a. Associate Professor Perley.

Prerequisite: Chemistry 35–a. 3 credits: 3 lectures.

37–c. Industrial Chemistry. A continuation of 36–b. Associate Professor Perley.

Prerequisite: Chemistry 36–b. 3 credits: 3 lectures.

38–a. Advanced Quantitative Laboratory. Gas analysis, etc. Assistant Professor Stewart.

Prerequisite: Chemistry 28–c. Required of Seniors in Chemical Engineering. 5 credits: 5 laboratories.

39–a. Thesis. The time is devoted to some selected subject, and the student is required to present a thesis showing him to be a careful manipulator and a person of independent thought. Professor James.

For Seniors in Chemistry who have completed all quantitative analysis. 5 credits: 5 laboratories.

40–b. Thesis. Similar to Chemistry 39–a. Professor James.

Required of students in Chemical Engineering and students in Arts and Science course in Chemistry. 5 credits: 5 laboratories.

41–c. Thesis. A continuation of 40–b. Professor James.

Required of students in Chemical Engineering and students in Arts and Science course in Chemistry. 5 credits: 5 laboratories.

42–a. Physical Chemical Laboratory. Associate Professor Perley.

Prerequisite: Chemistry 31–c. Required of students in Chemical Engineering. 2 credits: 2 laboratories.

[**DRAWING**—see Architecture and Drawing, Page 130]

ELECTRICAL ENGINEERING

C. E. Hewitt, *Professor*
Leon W. Hitchcock, *Associate Professor*

1–a. Dynamo Electric Machinery. This subject includes a genera study of the various electrical quantities such as electromotive force, current, resistance, permeability of iron; the use of standard measuring instruments; direct and alternating current dynamos and motors, including elementary theory. A study is made of electrical measuring instruments, cells, batteries, electrolysis, electroplating, electrotyping, the elements of photometry and electric illumination, inductance, capacity, and elementary alternating currents. A large number of practical problems illustrate the applications of the above. One exercise a week is devoted to laboratory experiments illustrating the practical application of theory. Professor Hewitt.

Prerequisites: Physics 8–c and Mathematics 9–c. Required of Juniors in Electrical and Mechanical courses. 4 credits: 3 recitations; 1 laboratory.

2–b. Dynamo Electric Machinery. Continuation of 1–a. Professor Hewitt.

Prerequisite: Electrical Engineering 1–a. Required of Juniors in Electrical and Mechanical courses. 4 credits: 3 recitations; 1 laboratory.

3–c. Dynamo Electric Machinery. Continuation of 2–b. Associate Professor Hitchcock.

Prerequisite: Electrical Engineering 2–b. Required of Juniors in Electrical and Mechanical courses. 4 credits: 3 recitations; 1 laboratory.

4–c. Telegraph and Telephone. A study of the acoustic and electrical principles of telephony; transmitting and receiving apparatus; magneto and common-battery switchboards and accessories; selective party-line systems; intercommunicating systems; overhead and underground construction; phantom, simplex, and composite circuits; transpositions, etc.; the principles of telegraphy, sounders, repeaters, etc.; wireless telegraphy and telephony; automatic devices, electric signaling for purposes of alarm, railroads, etc. Associate Professor Hitchcock.

Elective for Juniors and Seniors. 3 credits: 3 recitations.

5-c. Application of Electricity to Agriculture. Arranged for and adapted to students taking agriculture. The subject consists of a general study of the electric dynamo and motor, method of connecting them to the supply circuit, and the care and operation of each; a general study of simple problems in transmission; methods of wiring for electric power and lighting; the telephone, including the general principles upon which it operates and different systems of installation; electric bell wiring and signaling apparatus; simple water power developments and equipments; electrical utensils for domestic use, etc. Professor Hewitt.

Elective for Seniors in Agriculture. 3 credits: 2 recitations; 1 laboratory.

6-a. Practical Electricity. Arranged for and adapted to students taking the Mechanics Arts course. Professor Hewitt.

Required of Seniors in the Mechanics Arts course. 3 credits: 2 recitations; 1 laboratory.

7-a. Electrical Engineering Practice. A study of the properties of periodic curves; the effects of inductance and capacity; the use of complex quantities; and a more detailed study of generators, motors, transformers, converters, and other electrical apparatus. Associate Professor Hitchcock.

Prerequisite: Electrical Engineering 3-c. 3 credits: 3 recitations.

8-b. Electrical Engineering Practice. A continuation of 7-a. Associate Professor Hitchcock.

Prerequisite: Electrical Engineering 7-a. 3 credits: 3 recitations.

9-c. Hydro-Electric Developments. A study of hydro-electric developments, including the design of reinforced concrete dams and power houses and the general subjects of water-power engineering; high tension power transmission; design of transmission lines and distributing systems; selection of apparatus for generating stations and distributing systems; lightning protection. Professor Hewitt.

Required of Seniors in Electrical and Mechanical Construction courses. 3 credits: 3 recitations.

10-a. Electric Railways. The practicability of construction from an economic standpoint; determination of the size, type, and seating capacity of cars; track location; train schedules; methods of control train resistance; speed-time and current-time curves; selection of motors; the feeder system; electrolysis; power station and sub-station location; storage batteries; electric track switches, etc. Illustrated by problems. Associate Professor Hitchcock.

Required of Seniors in Electrical Engineering. 3 credits: 3 recitations.

11–a. Electrical Laboratory. An advanced series of experiments. A written report will be required, for which one additional credit hour will be given. Professor Hewitt, Associate Professor Hitchcock.

Required of Seniors in Electrical Engineering. 3 credits: 2 laboratories.

12–b. Electrical Laboratory. Continuation of 11–a. Professor Hewitt, Associate Professor Hitchcock.

Prerequisite: Electrical Engineering 11–a. Required of Seniors in Electrical Engineering. 3 credits: 2 laboratories.

14–c. Thesis. (A deposit of fifteen dollars to cover any damage done to instruments, apparatus, etc., is required in this subject. Any unexpended balance is refunded at the close of the college year. Where apparatus is constructed, as a part of a thesis, it shall remain the property of the department. Optional with head of department.) Professor Hewitt, Associate Professor Hitchcock.

Required of Seniors in Electrical Engineering. 3 credits: 1 recitation; 2 laboratories.

15–a. Industrial Electricity. A careful study of the methods employed in electrical measurements; resistance of wire and batteries; current measurement by ammeters and electrolysis; the use of electrical measuring instruments; a series of laboratory experiments specially arranged to meet the requirements of chemical engineers. A brief study will be made of the dynamo, motor, transformer, primary and secondary batteries, arc and incandescent lamps and the general principles of electrical distribution. Experiments in electrolysis, electrical furnaces, reduction of metals, etc., will be given. Associate Professor Hitchcock.

Required of Seniors in Chemical Engineering. 3 credits: 2 recitations; 1 laboratory.

16–b. Industrial Electricity. Continuation of 15–a. Professor Hewitt.

Prerequisite: Electrical Engineering 15–a. Required of Seniors in Chemical Engineering. 3 credits: 2 recitations; 1 laboratory.

17–c. Industrial Electricity. Continuation of 16–b. Professor Hewitt.

Prerequisite: Electrical Engineering 16–b. Required of Seniors in Chemical Engineering. 3 credits: 2 recitations; 1 laboratory.

18–c. Design of Electrical Machinery. A study of the design of the more important electrical machines, including the calculation of the dimensions of the machine, both electrical and mechanical, and the

predetermination of its performance from the dimensions. Associate Professor Hitchcock.

Prerequisite: Electrical Engineering 8–b. Required of Seniors in Electrical Engineering. 3 credits: 1 recitation; 2 laboratories.

19–c. **Illuminating Engineering.** A theoretical discussion of the principles of illumination and the application of these principles to concrete examples. Associate Professor Hitchcock.

Required of Seniors in Electrical Engineering who do not take Electrical Engineering 14–c. 3 credits: 3 recitations.

20–c. **Contracts and Specifications.** The laws and forms of engineering contracts; standard specifications for materials of construction and apparatus.

Required of Seniors in Electrical and Mechanical Engineering and Seniors in Electrical and Mechanical Construction courses. 2 credits: 2 recitations.

21–b. **Electrical Problems.** A large number of problems in both direct and alternating current will be performed to illustrate the application of electrical principles.

Elective for Seniors in Electrical and Mechanical Engineering. 2 credits: 2 recitations.

100–a. **Elements of Electrical Construction.** In the recitation period, a study is made of the following subjects: the general principles of electricity and magnetism; the general principles involved in the wiring of buildings in order that electricity may be used for electric lighting, electric power and for other domestic purposes; the requirements of the National Board of Fire Underwriters in connection with electrical installations.

In the laboratory periods, actual experiments are performed to illustrate the different types of electric wiring, including the use of the various electric fittings and their proper installation; various experiments are performed to illustrate in a practical way the general principles of electric construction. The laboratory periods run parallel with the recitation periods and give a student the actual practical applications of the different principles taken up. Professor Hewitt.

Required of Juniors taking Architectural, Electrical and Mechanical Construction. 3 credits: 2 lectures; 1 laboratory.

101–b. **Direct and Alternating Current Apparatus.** In the recitation periods the following subjects are studied: principles of dynamos and motors, both direct and alternating current; commercial testing for faults in dynamos, motors and other electrical devices; general repair work, including materials available for such work and the adapta-

tion of these materials to different kinds of repairing; signaling apparatus bells, gas ignition, etc.; the method of computing the size of feeder and transmission circuits; measuring instruments, electric safety devices, switches, wattmeters, etc.; the fundamental principles and operation of telephones including bridging, series, and intercommunicating types.

In laboratory periods actual experiments are performed on dynamos and motors, both direct and alternating current, showing the method of connection, operation and care of the same; experiments are performed on different types of telephones; actual practice is given in repair work winding of armatures, transformers, etc. Arrangements are made for experiments in testing out and locating faults in dynamos, motors transformers, etc. Associate Professor Hitchcock.

Prerequisite: Electrical Engineering 100–a. Required of Juniors taking Architectural, Electrical and Mechanical Construction. 3 credits: 2 lectures; 1 laboratory.

102–c. **Direct and Alternating Current Apparatus.** Continuation of 101–b. Associate Professor Hitchcock.

Prerequisite: Electrical Engineering 101–b. Required of Juniors taking Architectural, Electrical and Mechanical Construction. 3 credits: 2 lectures; 1 laboratory.

103–a. **Electrical Machinery.** Its basic principles; the construction, operation and efficiency of such machinery; dynamos for constant potential, dynamos for constant current; series, shunt, compound and differential wound motors; motor generators and boosters; polyphase alternators and polyphase motors; transformers; synchronous and induction motors. Professor Hewitt.

Prerequisite: Electrical Engineering 102–c. Required of Seniors taking Electrical Construction. 4 credits: 4 lectures.

104–b. **Electric Machinery.** Continuation of 103–a. Associate Professor Hitchcock.

Prerequisite: Electrical Engineering 103–a. Required of Seniors taking Electrical Construction. 4 credits: 4 lectures.

105–a. **Electric Laboratory.** Dynamo efficiency and special dynamo operations; alternating current generators; synchronous machines; induction motor tests; transformer tests; rotary converter, etc. Associate Professor Hitchcock.

Required of Seniors taking Electrical Construction. 2 credits: 2 laboratories.

106–b. Electric Laboratory. Continuation of 105–a. Associate rofessor Hitchcock.

Prerequisite: Electrical Engineering 105–a. Required of Seniors taking Electrical Construction. 2 credits: 2 laboratories.

107–c. Electric Laboratory. Continuation of 106–b. Associate rofessor Hitchcock.

Prerequisite: Electrical Engineering 106–b. Required of Seniors taking Electrical Construction. 2 credits: 2 laboratories.

108–a. Electric Design. Study of principles; complete designs are ıade of a rheostat, electro-magnets, switches, electrical controlling evices, regulators, etc. Associate Professor Hitchcock.

Required of Seniors taking Electrical and Mechanical Construction. 2 credits: 1 lecture; 1 laboratory.

109–b. Electric Design. Continuation of 108–a. Associate Proessor Hitchcock.

Prerequisite: Electrical Engineering 108–a. Required of Seniors taking Electrical and Mechanical Construction. 2 credits: 1 lecture; 1 laboratory.

MATHEMATICS

Charles C. Steck, *Professor*
Carl A. Garabidian, *Instructor*
Jesse Pierce, *Instructor*
Horace Olson, *Instructor*

1–a. Trigonometry. The general angle; trigonometric functions f the general angle; radian measure; solution of right and oblique tringles with and without logarithms; trigonometric identities and equaons; inverse trigonometric functions. Professor Steck, Mr. Pierce nd Mr. Olson.

Mathematics 2–a or 101–a required as a parallel subject. Required of Freshmen in Engineering, Mechanic Arts, Construction and Arts and Science Chemistry. 3 credits: 3 recitations.

2–a. Algebra. Review of fundamental operations; theory and use logarithms; graphs of simple algebraic functions. Professor Steck, Ir. Pierce and Mr. Olson.

Mathematics 1–a required as a parallel subject. Required of Freshmen in Engineering, and in Arts and Science Chemistry. 3 credits: 3 recitations.

3–b. Algebra. A continuation of 2–a. Variations; complex numrs; elements of determinants and theory of equations; special prob-

lems in solid geometry for algebraic solution. Professor Steck, M Pierce, Mr. Olson.

> Prerequisites: Mathematics 1–a and 2–a; Mathematics 4–b required as a parallel subject. Required of Freshmen in Engineering and in Arts and Science Chemistry. 3 credits: 3 recitations.

4–b. Analytic Geometry. Cartesian and polar co-ordinates; grap of algebraic functions; change of co-ordinate axes; graphs of transce dental functions; straight line; circle; conics. Professor Steck, M Pierce, Mr. Olson.

> Prerequisites: Mathematics 1–a and 2–a; Mathematics 3–b required as a parallel subject. Required of Freshmen in Engineering and in Arts and Science Chemistry. 3 credits: 3 recitations.

5–c. Analytic Geometry. A continuation of 4–b. Empirical equ tions; higher plans curves; analytic geometry of space. Profess Steck, Mr. Pierce and Mr. Olson.

> Prerequisites: Mathematics 3–b and 4–b; Mathematics 6–c required as a parallel subject. Required of Freshmen in Engineering and in Arts and Science Chemistry. 3 credits: 3 recitations.

6–c. Calculus. Differentiation of the standard elementary form with simple applications. Professor Steck, Mr. Pierce and Mr. Olso

> Prerequisites: Mathematics 3–b and 4–b; Mathematics 5–c required as a parallel subject. Required of Freshmen in Engineering and in Arts and Science Chemistry. 3 credits: 3 recitations.

7–a. Calculus. A continuation of 6–c. More advanced applic tions of differentiation; integration of standard elementary forms. Pr fessor Steck and Mr. Pierce.

> Prerequisites: Mathematics 5–c and 6–c. Required of Sophomores in Engineering and in Arts and Science Chemistry. 3 credits: 3 recitations.

8–b. Calculus. A continuation of Mathematics 7–a. Speci methods of integration; the definite integral; applications of the definit integral. Professor Steck and Mr. Pierce.

> Prerequisite: Mathematics 7–a. Required of Sophomores in Engineering. 3 credits: 3 recitations.

9–c. Calculus. A continuation of Mathematics 8–b. Applicatior of the definite integral to geometry, physics and mechanics. Professc Steck and Mr. Pierce.

> Prerequisite: Mathematics 8–b. Required of Sophomores in Engineering. 3 credits: 3 recitations.

10-a. Advanced Calculus. A study of ordinary differential equations, especially those of the first and second orders, with applications to geometry, physics and mechanics. Mr. Pierce.

Prerequisite: Mathematics 9-c. Elective for Juniors and Seniors in Engineering and in Arts and Science. Not given in 1919-1920. 3 credits: 3 recitations.

11-b. Advanced Calculus. A study of some of the more advanced topics of differential and integral calculus. Professor Steck.

Prerequisite: Mathematics 9-c. 3 credits: 3 recitations.

12-c. Advanced Calculus. A continuation of 11-b. Professor Steck.

Prerequisite: Mathematics 11-b. 3 credits: 3 recitations.

13-a. Teaching of Mathematics in Secondary Schools. Lectures and reports on assigned readings. Particular attention given to the teaching of first-year algebra and plane geometry. A term paper on some assigned topic will be required. Professor Steck.

Prerequisite: Education 1-a and 2-b. Offered in alternate years. Given in 1919-1920. 3 credits: 3 recitations.

14-b. Theory of Equations and Determinants. Definitions and properties of determinants; complex numbers; properties of polynomials and equations; solution of numerical equations; elimination. Professor Steck.

Prerequisite: Mathematics 9-c. Offered in alternate years. Given in 1920-1921. 3 credits: 3 recitations.

15-c. Theory of Equations and Determinants. A continuation of 14-b.

Prerequisite: 14-b. Offered in alternate years. Given in 1920-1921. 3 credits: 3 recitations.

16-a. Advanced Analytic Geometry. More advanced work than that covered in Mathematics 5-c. Professor Steck.

Prerequisite: Mathematics 9-c. Offered in alternate years. Given in 1919-1920. 3 credits: 3 recitations.

17-b. Advanced Analytic Geometry. An introduction to analytic geometry from the modern point of view. Professor Steck.

Prerequisite: Mathematics 16-a. Offered in alternate years. Given in 1919-1920. 3 credits: 3 recitations.

18-c. Advanced Analytic Geometry. A continuation of 17-b. Professor Steck.

Prerequisite: Mathematics 17-b. 3 credits: 3 recitations.

19–a. Surveying. Theory, use and adjustment of the chain, level and transit. The field work consists of measuring distances, angles and areas with the chain; establishing bench marks, running profiles, grade lines and cross-sections with the level; finding areas with the transit. Mr. Pierce.

> Prerequisites: Mathematics 9–c and Drawing 3–c. Required of Seniors in Mechanical and Electrical Engineering and Seniors in Arts and Science majoring in mathematics. 3 credits: 3 laboratories.

20–c. Surveying. A continuation of 19–a. Theory, use and adjustment of the plane table. The field work consists of laying out simple curves with the transit and making topographic maps with the plane table and transit. Mr. Pierce.

> Prerequisite: Mathematics 19–a. Required of Seniors in Mechanical and Electrical Engineering, and Arts and Science Seniors majoring in Mathematics. 3 credits: 3 laboratories.

21–b. Trigonomtery. The elements of plane trigonometry. Mr. Olson.

> Required of Freshmen in Agriculture. 3 credits: 3 recitations.

22–a. Surveying. Theory and use of the chain, level and transit. The field work consists of measuring distances, angles and areas with the chain; establishing bench marks, running profiles, grade lines and cross sections with the level; finding areas with the transit. Mr. Pierce.

> Prerequisite: Mathematics 1–a or 21–b. Required of Seniors in Agriculture (Horticulture and Forestry), and Construction. Elective for other Seniors in Agriculture and Mechanic Arts. 3 credits: 3 laboratories.

23–c. Surveying. A continuation of 22–a. Theory and use of the plane table. The making of topographic maps with the plane table and transit. Mr. Pierce.

> Prerequisite: Mathematics 22–a. Required of Seniors in Construction Engineering. Elective for Seniors in Agriculture and Mechanic Arts. 3 credits: 3 laboratories.

101–a. Algebra. Review of fundamental operations including quadratics; theory and use of logarithms; graphs of simple algebraic curves. Professor Steck, Mr. Pierce, Mr. Olson.

> Prerequisite: Mathematics 1–a required as a parallel subject. Required of Freshmen in Mechanic Arts and Construction courses. 3 credits: 3 recitations.

102–b. Shop Mathematics. Applications of algebra, geometry and trigonometry to shop problems. Professor Steck.

> Prerequisites: Mathematics 1–a and 101–a. Required of Freshmen in Construction and Mechanic Arts. 3 credits: 3 recitations.

103–c. Practical Mathematics. Selected topics from algebra and geometry, with applications to practical problems. Professor Steck.

Prerequisite: Mathematics 102–b. Required of Freshmen in Construction and Mechanic Arts. 3 credits: 3 recitations.

MECHANICAL ENGINEERING

EDWARD L. GETCHELL, *Instructor and Acting Head of Department*
—— ——, *Assistant*

1–b. Kinematics of Machinery. A study of motion in machine construction; instantaneous centers and their application to the analysis of the direction and velocity of motion; velocity and acceleration diagrams; design of quick return mechanisms; study of tooth gearing; design of cams; and the study of trains of gearing. —— ——, Assistant.

Prerequisite: Drawing 4–a. Required of Sophomores in Electrical and Mechanical Engineering. 3 credits: 2 recitations; 1 laboratory.

2–c. Mechanics. Force; equilibrium; composition and resolution of forces; center of gravity; couples; non-current forces; stresses in cranes and framed structures; moment of inertia of areas and solids; motion of translation and rotation. Mr. Getchell.

Prerequisite: Mathematics 8–b. Required of Sophomores in Electrical and Mechanical Engineering. 4 credits: 4 recitations.

3–a. Mechanics. Work; energy; power; friction; dynamometers; principles of dynamics as applied to the design of flywheels and other moving parts of machines. Mr. Getchell.

Prerequisite: Mechanical Engineering 2–c. Required of Juniors in Electrical and Mechanical Engineering. 3 credits: 3 recitations.

4–b. Mechanics. Elementary stresses and strains; shear; riveted joints; strength and stiffness of beams; design of beams; continuous girders; torsion; resilience; columns and column formulas used by engineers. Mr. Getchell.

Prerequisite: Mechanical Engineering 3–a. Required of Juniors in Electrical and Mechanical Engineering. 3 credits: 3 recitations.

5–a. Mechanical Laboratory. Efficiency tests of simple machines; calibration of instruments used in laboratory practice; tension, transverse, and compression tests of steel, iron and wood. —— ——, Assistant.

Prerequisite: Mechanical Engineering 2–c. Required of Juniors in Electrical and Mechanical Engineering. 2 credits: 1 laboratory.

6-b. **Mechanical Laboratory.** Tests of lubricating oils; valve setting; steam calorimeter tests; flue gas analysis; engine clearance volume tests; etc. —— ——, Assistant.

Prerequisite: Mechanical Engineering 5-a. Required of Juniors in Electrical and Mechanical Engineering. 2 credits: 1 laboratory.

7-c. **Mechanical Laboratory.** Friction tests of steam engines; cement and concrete tests; calibration of weirs and orifices; oxyacetylene welding and cutting. —— ——, Assistant.

Prerequisite: Mechanical Engineering 6-b. Required of Juniors in Electrical and Mechanical Engineering. 2 credits: 1 laboratory.

8-a. **Materials of Construction.** Manufacture of iron and steel, brasses, and white metal alloys; heat treatment of steel; manufacture of cement; production of cast iron and cast steel, together with the proper arrangement of foundry and equipment; machinery for and arrangement of smithy; drop forging; wire drawing, etc. —— ——, Assistant.

Required of Juniors in Electrical and Mechanical Engineering; Seniors in Chemical Engineering; and Juniors in Construction. 3 credits: 3 recitations.

9-a. **Valve Gears and Boiler Design.** The application of the Bilgram and Zuener valve diagrams to practical problems in connection with the slide valve. The study of various types of valve gears and governors. The design of the slide valve and the Corliss valve, and the complete design of a return tubular boiler. —— ——, Assistant.

Prerequisite: Mechanical Engineering 2-c. Required of Juniors in Mechanical and Electrical Engineering. 3 credits: 1 recitation, 2 laboratories.

10-b. **Machine Design.** The elements of machines; friction; lubrication; axles and shafting; belt, rope, and chain transmission; toothed gearing; flywheels and pulleys; machine frames and attachments. The work of the class room is to be supplemented by practical problems in the drawing room. Mr. Getchell.

Prerequisite: Mechanical Engineering 3-a. Required of Juniors in Mechanical and Electrical Engineering. 3 credits: 2 recitations; 1 laboratory.

11-c. **Machine Design.** A continuation of 10-b. The work in the drawing room includes the complete design of some machine, together with an estimate of the cost of the machine completely manufactured. Mr. Getchell.

Prerequisite: Mechanical Engineering 10-b. Required of Juniors in Mechanical and Electrical Engineering. 3 credits: 1 recitation; 2 laboratories.

12–a. Hydraulics. The mechanics of liquids; pressure on submerged areas such as gates, dams, etc., measurement of the flow of water through weirs, nozzles, orifices, and the flow of water in pipes, channels, and streams. —— ——, Assistant.

Prerequisite: Mechanical Engineering 4–b. Required of Seniors in Mechanical and Electrical Engineering. 3 credits: 3 recitations.

13–b. Hydraulics. A continuation of 12–a. The application of the principles of hydraulics to water motors such as turbines, overshot and undershot wheels, Pelton wheels, etc.; also the consideration of the various types of rotary pumps. —— ——, Assistant.

Prerequisite: Mechanical Engineering 12–a. Required of Seniors in Mechanical and Electrical Engineering. 3 credits: 3 recitations.

14–b. Thermodynamics. A study of the principles of thermodynamics, and the thermodynamic properties of steam and gases. Efficiency of engine cycles; the steam engine, simple, compound and triple expansion; calorimeters and the testing of steam engines. Mr. Getchell.

Prerequisite: Mathematics 8–b. Required of Juniors in Mechanical and Electrical Engineering, and Seniors in Chemical Engineering. 3 credits: 3 recitations.

15–c. Thermodynamics. A continuation of 14–b. Economy of the steam engine and methods of increasing this economy; study of different types of internal combustion engines; air compressors; refrigeration machine; injectors; steam turbines and the design of turbine nozzles. Mr. Getchell.

Prerequisite: Mechanical Engineering 14–b. Required of Juniors in Mechanical and Electrical Engineering and Seniors in Chemical Engineering. 3 credits: 3 recitations.

16–a. Steam Power Plants. Fuels and combustion and the losses due to incomplete combustion; boilers of various types; furnaces and stokers; methods of handling coal and ash; design of stacks; and a study of the different types of reciprocating engines. Mr. Getchell.

Prerequisite: Mechanical Engineering 15–c. Required of Seniors in Mechanical and Electrical Engineering. 3 credits: 3 recitations.

17–b. Steam Power Plants. A continuation of 16–a. The study of the various types of steam turbines, condensers, feed water purifiers and heaters, pumps and other auxiliary equipment of the steam power plant. Mr. Getchell.

Prerequisite: Mechanical Engineering 16–a. Required of Seniors in Mechanical and Electrical Engineering. 3 credits: 3 recitations.

18–a. Mechanical Laboratory. Fuel analysis; gas and steam engine tests; tests of different types of injectors; pump tests, and boiler tests. —— ——, Assistant.

Prerequisite: Mechanical Engineering 15-c. Required of Seniors in Mechanical and Electrical Engineering. 2 credits: 1 laboratory.

19–b. Mechanical Laboratory. A continuation of 18–a. Special work of an advanced nature in testing machines, etc. —— ——, Assistant.

Prerequisite: Mechanical Engineering 18-a. Required of Seniors in Mechanical Engineering. 2 credits: 1 laboratory.

20–c. Mechanical Laboratory. A continuation of 19–b. Original work to be carried out under the direction of the instructor. —— ——, Assistant.

Prerequisite: Mechanical Engineering 19-b. Required of Seniors in Mechanical Engineering. 2 credits: 1 laboratory.

21–b. Heating and Ventilating. A study of the heat losses and the design of heating and ventilating systems as applied to residence and low pressure work.

Required of Seniors in Mechanical Engineering. 3 credits: 2 recitations; 1 laboratory.

22–c. Heating and Ventilating. A continuation of 21–b with special reference to the heating and ventilating of factory buildings and low pressure district heating. —— ——, Assistant.

Prerequisite: Mechanical Engineering 21–b. Required of Seniors in Mechanical Engineering. 3 credits: 1 recitation; 2 laboratories.

23–b. Power Plant Design. The design of a complete power plant for mill or factory, including the choice and location of necessary boilers, engines, or turbines and all auxiliary apparatus needed for a complete steam plant, together with the design of a suitable building for housing the same. Mr. Getchell.

Prerequisite: Mechanical Engineering 16–a. Required of Seniors in Mechanical Engineering. 2 credits: 2 laboratories.

24–c. Power Plant Design. A continuation of 23–b. The layout and equipment of a mill or factory with reference to the greatest efficiency of operation. Mr. Getchell.

Prerequisite: Mechanical Engineering 23–b. Required of Seniors in Mechanical Engineering. 2 credits: 2 laboratories.

25–a. Industrial Engineering. A study of factory conditions, safety devices, sanitation, lighting, ventilation, fire prevention, methods of keeping costs and methods of supervision of factories. —— ——, Assistant.

Prerequisite: Mechanical Engineering 17–b. Required of Seniors in Mechanical Engineering. 3 credits: 3 recitations.

26–b. Industrial Engineering. A continuation of 25–a. A study of several of the forms of scientific management as applied to factory supervision. —— ——, Assistant.

Prerequisite: Mechanical Engineering 25–a. Required of Seniors in Mechanical Engineering. 2 credits: 2 recitations.

101–b. Mechanics. Principles of mechanics as applied to engineering structures involving composition of forces, analytics, graphics, conditions of equilibrium, center of gravity, riveted joints. Mr. Getchell.

Required of Sophomores in Construction. 3 credits: 3 recitations.

102–c. Mechanics. A continuation of 101–b. Concurrent forces, motion of translation and rotation, dynamics as applied to the design of flywheels and other rotating parts. Mr. Getchell.

Prerequisite: Mechanical Engineering 101–b. Required of Sophomores in Construction. 3 credits: 3 recitations.

103–a. Mechanics. A continuation of 102–c. Strength of materials, design of beams, columns, etc. Mr. Getchell.

Prerequisite: Mechanical Engineering 102–c. Required of Juniors in Construction. 3 credits: 3 recitations.

104–a. Boiler Design and Graphics. A study of the graphical solution of forces acting on roof trusses and other framed structures, and the complete design of a return tubular boiler. —— ——, Assistant.

Prerequisite: Mechanical Engineering 102–c. Required of Juniors in Mechanical and Electrical Construction. 3 credits: 3 laboratories.

105–b. Boilers. A study of fuels, the theory of combustion, the various types of boilers, and the design of chimneys and cooling towers. —— ——, Assistant.

Required of Juniors in Mechanical and Electrical Construction. 3 credits: 3 recitations.

106–c. Engines and Turbines. A study of the theory of the steam engine and of the various types of reciprocating engines and steam turbines. —— ——, Assistant.

Required of Juniors in Mechanical and Electrical Construction. 3 credits: 3 recitations.

107–a. Mechanical Laboratory. Testing materials that enter into building construction, and construction of machines. —— ——, Assistant.

Prerequisite: Mechanical Engineering 162–c. Required of all Juniors in Construction. 2 credits: 1 laboratory.

108–b. Mechanical Laboratory. Testing of gages and other instruments that are used in the laboratory; tests of lubricating oils, calorimeters, flue gas analysis, etc. —— ——, Assistant.

Prerequisite: Mechanical Engineering 107–a. Required of Juniors in Mechanical and Electrical Construction. 2 credits: 1 laboratory.

109–c. Mechanical Laboratory. Brake tests on gas and steam engines, steam injector tests, coal analysis, and boiler tests. —— ——, Assistant.

Prerequisite: Mechanical Engineering 108–b. Required of Juniors in Mechanical and Electrical Construction. 2 credits: 1 laboratory.

110–b. Machine Design. The application of principles of mechanics to the design of some machine. Mr. Getchell.

Prerequisite: Mechanical Engineering 103–a. Required of Juniors in Electrical and Mechanical Construction. 2 credits: 2 laboratories.

111–a. Heating and Ventilating. The principles of heating and ventilating as applied to the installation of heating systems in residences. —— ——, Assistant.

Required of Seniors in Mechanical Construction. 4 credits: 2 recitations; 2 laboratories.

112–b. Heating and Ventilating. A continuation of 111–a. A study of the problems arising in the heating and ventilating of factories and mills and those in connection with low pressure district heating. —— ——, Assistant.

Prerequisite: Mechanical Engineering 111–a. Required of Seniors in Mechanical Construction. 4 credits: 2 recitations; 2 laboratories.

113–c. Industrial Engineering. A study of factory conditions, safety devices, sanitation, lighting, ventilating, fire prevention, methods of keeping costs and methods of supervision of factories. —— ——, Assistant.

Required of Seniors in Mechanical Construction. 3 credits: 3 recitations.

114–a. Mechanical Laboratory. Advanced work in engine testing and the testing of the machines that are used in the laboratory. —— ——, Assistant.

Required of Seniors in Mechanical Construction. 2 credits: 1 laboratory.

115–b. Mechanical Laboratory. A continuation of 114–a. Advanced work in engine testing and the testing of the machines that are used in the laboratory. —— ——, Assistant.

Prerequisite: Mechanical Engineering 114–a. Required of Seniors in Mechanical Construction. 2 credits: 1 laboratory.

116–c. Mechanical Laboratory. A continuation of 115–b. Advanced work in engine testing and the testing of the machines that are used in the laboratory. —— ——, Assistant.

Prerequisite: Mechanical Engineering 115–b. Required of Seniors in Mechanical Construction. 2 credits: 1 laboratory.

117–b. Power Plant Design. The design of a complete power plant for a factory. This will include the choice of the proper boilers, engines or turbines, and auxiliary apparatus, and the most efficient layout for the equipment chosen. Mr. Getchell.

Required of Seniors in Mechanical Construction. 3 credits: 2 recitations; 1 laboratory.

118–c. Power Plant Design. A continuation of 117–b. The work includes the layout of the machinery of a factory with special reference to the most efficient routing of the products through the building. Mr. Getchell.

Prerequisite: Mechanical Engineering 117–b. Required of Seniors in Mechanical Construction. 3 credits: 1 recitation; 2 laboratories.

119–b. Hydraulics. Hydrostatics; instruments and observations; theoretical and actual flow through orifices, weirs, pipes and conduits; dynamic pressure of water. —— ——, Assistant.

Required of Seniors in Mechanical and Electrical Construction. 3 credits: 3 recitations.

MINERALOGY

CHARLES JAMES, *Professor*
MELVIN M. SMITH, *Instructor*

1–b. Mineralogy. A brief study of blowpipe analysis, followed by laboratory practice in the determination and study of minerals, with special reference to their economic value. Mr. Smith.

Prerequisite: Chemistry 3–c. Required of students in Chemical Engineering. 3 credits: 3 laboratories.

PHYSICS

HORACE L. HOWES, *Professor*
CLEMENT MORAN, *Assistant Professor*
L. B. HOFFMAN, *Student Assistant*

1–a. **Introductory Physics.** Properties of matter; mechanics; heat. Experimental lectures with certain required and optional references. Professor Howes.

Required of Sophomores in Construction, Agriculture and Mechanic Arts courses. 3 credits: 3 lectures.

2–b. **Introductory Physics.** A continuation of 1–a, covering the subjects of magnetism and electricity. Professor Howes.

Prerequisite: Physics 1–a. Required of Sophomores in Construction, Agriculture and Mechanic Arts courses. 3 credits: 3 lectures.

3–c. **Introductory Physics.** A continuation of 2–b, covering the subjects of wave motion, sound and light. Professor Howes.

Prerequisite: Physics 2–b. Required of Sophomores in Construction, Agriculture and Mechanic Arts courses. 3 credits: 3 recitations.

4–a. **Elementary Physics.** Selected topics in physics of elementary grade. Stress is laid on fundamental principles and their applications. Assistant Professor Moran.

Required of Freshmen in Home Economics and of Sophomores in Mechanic Arts. 3 credits: 2 recitations; 1 laboratory.

5–b. **Elementary Physics.** A continuation of 4–a. Assistant Professor Moran.

Prerequisite: Physics 4–a. Required of Freshmen in Home Economics and of Sophomores in Mechanic Arts. 3 credits: 2 recitations; 1 laboratory.

6–a. **General Physics.** Mechanics. Lectures, recitations and problems based upon some standard text. Calculus should precede or accompany this course. Physics 9–a covers the same subject in the laboratory and should be taken at the same time. Professor Howes, Assistant Professor Moran.

Required of Sophomores in Electrical and Mechanical Engineering and of Juniors in Chemical Engineering. 3 credits: 3 lectures.

7–b. **General Physics.** A continuation of 6–a, covering the subjects of heat, sound and light. Professor Howes, Assistant Professor Moran.

Prerequisite: Physics 6–a. Required of Sophomores in Electrical and Mechanical Engineering and of Juniors in Chemical Engineering. 3 credits: 3 lectures.

8–c. General Physics. A continuation of 7–b, covering the subjects of magnetism and electricity. Professor Howes, Assistant Professor Moran.

> Prerequisite: Physics 7–b. Required of Sophomores in Electrical and Mechanical Engineering and of Juniors in Chemical Engineering. 3 credits: 3 lectures.

9–a. General Physics Laboratory. Laboratory experiments in Mechanics, with written reports to accompany Physics 6–a. Assistant Professor Moran and Mr. Hoffman.

> Prerequisite or parallel subjects: Physics 4–a or 6–a. Required of Sophomores in Electrical and Mechanical Engineering and of Juniors in Chemical Engineering. 3 credits: 2 laboratories.

10–b. General Physics Laboratory. A continuation of 9–a, covering heat, sound and light. Assistant Professor Moran and Mr. Hoffman.

> Prerequisite or parallel subjects: Physics 5–b or 7–b; Physics 9–a. Required of Sophomores in Electrical and Mechanical Engineering and of Juniors in Chemical Engineering. 3 credits: 2 laboratories.

11–c. General Physics Laboratory. A continuation of 10–b, covering magnetism and electricity. Assistant Professor Moran and Mr. Hoffman.

> Prerequisites or parallel subjects: Physics 8–c; Physics 10–b. Required of Sophomores in Electrical and Mechanical Engineering and of Juniors in Chemical Engineering. 3 credits: 2 laboratories.

12–a. Household Physics. Professor Howes.

> Prerequisites: Physics 4–a and 5–b, or a one-year course in high school in the elements of physics. For Sophomores in Home Economics and open only to Smith-Hughes students. 3 credits: 2 recitations; 1 laboratory.

13–c. Elementary Optics and Photography. Lectures on the fundamental principles of geometrical optics and photographic instruments. A part of the laboratory work will consist of taking and finishing photographs. Students will furnish their own cameras and supplies. Assistant Professor Moran.

> Elective for all students except Freshmen and Two-Year Students in the first year 3 credits: 2 exercises; 1 laboratory.

101–c. Physics of Construction. The principles of physics as applied in heating plants, in electrical apparatus, in plumbing, etc. Professor Howes.

> Required of Juniors in Architectural Construction. 3 credits: 2 recitations; 1 lecture.

SHOPS

EDWARD L. GETCHELL, *Instructor and Acting Head of Department*
LYMAN J. BATCHELDER, *Instructor*
HAROLD D. MCBRIDE, *Instructor*

1–a. **Wood Work.** Instruction in the use and care of wood-working tools and machinery, saw filing, the steel square and its uses, plain pattern making, plain cabinet making and plain construction. Mr. Batchelder.

Required of Freshmen in Engineering and Mechanic Arts. 2 credits: 2 laboratories.

2–b. **Wood Work.** A continuation of 1–a. Plain cabinet work. Mr. Batchelder.

Required of all Freshmen in Construction courses and Mechanic Arts. 2 credits: 2 laboratories.

3–c. **Wood Work.** Foundry practice and pattern making. Management of cupola and reverberatory furnace in the making of cast iron; making of cores; flute and bench mouldings; setting of cores, and advanced pattern making. Mr. Batchelder.

Required of all Freshmen in Construction and Mechanic Arts. 2 credits: 2 laboratories.

4–b. **Forging.** This is a study of the forging of iron and steel and is designed to teach the operations of drawing, upsetting, welding, twisting, splitting, and punching of iron; the hardening, tempering, and annealing of cast steel; and the case hardening of mild steel as adapted to agricultural work. Mr. McBride.

Required of Juniors in Agriculture. 2 credits: 2 laboratories.

5–c. **Forging.** This is a study of the operations necessary in the forging of iron and steel and is designed to teach the methods of drawing, upsetting, welding, twisting, splitting, and punching of iron; also the hardening, tempering, and annealing of cast steel, and the case hardening of mild steel as adapted to engineering work. Mr. McBride.

Required of Freshmen in Mechanical and Electrical Engineering. 2 credits: 2 laboratories.

6–a. **Machine Work.** Exercises in bench work, chipping, filing, and scraping, and the laying out of work from drawings. A study of cutting edges and tool adjustments, together with a study of the cutting speeds and feeds on lathes, drill presses, etc. Practice in operating the drill press, and simple lathe work. Mr. McBride.

Required of Sophomores in Mechanical and Electrical Engineering. 2 credits: 2 laboratories.

7–b. Machine Work. A continuation of 6–a. Mr. McBride.

Prerequisite: Shop 6–a. Required of Sophomores in Mechanical and Electrical Engineering. 2 credits: 2 laboratories.

8–c. Machine Work. Advanced lathe work; also practice in the use of the milling machine, planer, shaper and grinder. Mr. McBride.

Required of Sophomores in Mechanical and Electrical Engineering. 2 credits: 2 laboratories.

9–a. Wood Work. Advanced cabinet work. Mr. Batchelder.

Required of Juniors in Mechanic Arts. 2 credits: 2 laboratories.

10–b. Wood Work. A continuation of 9–a. Mr. Batchelder.

Prerequisite: Shop 9–a. Required of Juniors in Mechanic Arts. 2 credits: 2 laboratories.

11–c. Wood Work. A continuation of 10–b. Advanced cabinet making and furniture finishing, including also a study of various substances used in furniture finishing. Mr. Batchelder.

Prerequisite: Shop 10–b. Required of Juniors in Mechanic Arts. 2 credits: 2 laboratories.

19–c. Wood Shop. Instruction in the care and use of tools in farm carpenter shop; saw filing; the making of various implements used on the farm; farm carpentry; use of steel square; laying out framing; care of lumber on the farm. Mr. Batchelder.

Required of Juniors in Agriculture. 2 credits: 2 laboratories.

21–c. Forging. This is a study of the operations necessary in the forging of iron and steel, and is designed to teach the methods of drawing, upsetting, welding, twisting, splitting, and punching of iron, also the hardening, tempering, and annealing of cast steel, and the case hardening of mild steel as adapted to the needs of the man who expects to teach the subject. Mr. McBride.

Required of Juniors in Mechanic Arts. 3 credits: 3 laboratories.

22–c. Machine Work. An elementary study of the operation of the principal machines suited to the chemist's needs. Mr. McBride.

Required of Seniors in Chemical Engineering. 3 credits: 3 laboratories.

23–a. Machine Work. Machine work arranged to meet the needs of students taking the Teacher Training course in Mechanic Arts. Mr. McBride.

Required of Seniors in Mechanic Arts. 3 credits: 3 laboratories.

24–b. **Machine Work.** A continuation of 23–a. Mr. McBride.

Prerequisite: Shop 23–a. Required of Seniors in Mechanic Arts. 3 credits: 3 laboratories.

25–c. **Machine Work.** A continuation of 24–b. Mr. McBride.

Prerequisite: Shop 24–b. Required of Seniors in Mechanic Arts. 3 credits: 3 laboratories.

26–a. **Practice Teaching.** Exercises, under supervision of the instructor, in teaching manual training in wood shop. Mr. Batchelder.

Required of Seniors in Mechanic Arts. 2 credits: 2 laboratories.

27–b. **Manual Training Practice.** A study of the principles of manual training, equipment of school shop, material to be used, subject-matter taught and method of presentation, as applied to grade schools. Mr. Batchelder.

Required of Seniors in Mechanic Arts. 2 credits: 1 recitation; 1 laboratory.

28–c. **Manual Training Practice.** A continuation of Shop 27–b as applied to high school work. Mr. Batchelder.

Prerequisite: Shop 27–b. Required of Seniors in Mechanic Arts. 2 credits: 1 recitation; 1 laboratory.

29–c. **Wood Work.** Advanced pattern making, involving split and loose piece patterns, core boxes, dry sand moulding, etc. Mr. Batchelder.

Required of Seniors in Mechanical and Electrical Engineering. 2 credits: 2 laboratories.

101–a. **Wood Work.** A continuation of 3–c; advanced pattern making, involving loose piece patterns, gated patterns, chills, dry sand mouldings, etc. Mr. Batchelder.

Prerequisite: Shop 3–c. Required of Sophomores in Architectural Construction and Mechanic Arts. 2 credits: 2 laboratories.

102–b. **Wood Work.** Architectural and cabinet wood turning; spindle, chuck, and face plate work. Mr. Batchelder.

Required of Sophomores in Architectural Construction and in Mechanic Arts. 2 credits: 2 laboratories.

103–c. **Wood Work.** Carpentry and building; including the laying out of foundations, rafters, stair stringers, trusses and the construction of buildings. Also a study of the common woods used in buildings. Mr. Batchelder.

Required of Sophomores in Architectural Construction and in Mechanic Arts. 2 credits: 2 laboratories.

104–a. Forging. Forging of iron and steel, and the operations of drawing, upsetting, welding, twisting, splitting and punching of iron. Also the hardening, tempering and annealing of cast steel, and the case hardening of mild steel. Mr. McBride.

Required of Sophomores in Mechanical and Electrical Construction. 2 credits: 2 laboratories.

105–b. Machine Work. Exercises in bench work, chipping, filing and scraping, and the layout of work from drawings. A study of cutting edges and tool adjustments best suited for different metals, together with a study of the cutting speeds and feeds. Practice in operating the drill press and in simple lathe work. Mr. McBride.

Required of Sophomores in Mechanical and Electrical Construction. 2 credits: 2 laboratories.

106–c. Machine Work. A continuation of 105–b. Mr. McBride.

Prerequisite: Shop 105–b. Required of Sophomores in Mechanical and Electrical Construction. 2 credits: 2 laboratories.

107–a. Machine Work. Advanced lathe work; also practice in the use of the milling machine, planer, shaper, and grinder. Mr. McBride.

Required of Juniors in Mechanical and Electrical Construction. 2 credits: 2 laboratories.

108–b. Machine Work. Manufacture of some machine, using more advanced methods and special tools. Mr. McBride.

Required of Juniors in Mechanical and Electrical Construction. 2 credits: 2 laboratories.

109–c. Machine Work. A continuation of 108–b. Mr. McBride.

Prerequisite: Shop 108–b. Required of Juniors in Mechanical and Electrical Construction. 2 credits: 2 laboratories.

PHYSICAL EDUCATION

PHYSICAL EDUCATION FOR MEN

WILLIAM H. COWELL, *Head of Department and Coach*
—— ——, *Instructor*

Aims.—1. To promote regulated exercise, and to provide an incentive and opportunity for every student to receive physical recreation.

2. To secure good posture, a uniform development and a reasonable amount of bodily skill and grace.

3. To stimulate the habit of exercise.

Equipment.—The gymnasium affords fine accommodation for training and indoor games.

On the first floor are the lockers and various shower baths.

On the second floor are the offices and the main gymnasium hall, which is 90 x 45.

On the third floor is the running track, the popular College Club Room containing comfortable lounging quarters, billiard and pool tables, for the use of the men students.

An athletic field adjoins the gymnasium. The field is equipped with a one-fourth mile cinder track, baseball and football field and other necessary features.

Requirements.—Unless excused by proper authority, all men students in the freshman and sophomore classes are required to complete the prescribed work in Physical Education.

Students physically unfit and students working their way through college may be excused.

A regulation gymnasium suit, the cost of which is about two dollars, must be worn.

All entering men students are examined, measured and a chart made for corrections, which affords a comparison of the student's own measurements with those of the nearly ideal, stimulating a personal interest in correcting any abnormality that may be present.

51–a. Physical Education. General setting up exercises and outdoor work.

Required of Freshmen. ½ credit: 2 hours' work.

52–b. Physical Education. Continuation of 51–a and indoor classes.

Required of Freshmen. ½ credit: 2 hours' work.

53–c. Physical Education. Elementary gymnasium exercises and field practices.

Required of Freshmen. ½ credit: 2 hours' work.

54–a. Physical Education. Gymnasium apparatus exercises and outdoor field games. Three lectures on intercollegiate football.

Required of Sophomores. ½ credit: 2 hours' work.

55–b. Physical Education. Indian club and dumb bell exercises, including indoor games. Three lectures on intercollegiate basket-ball.

Required of Sophomores. ½ credit: 2 hours' work.

56–c. Physical Education. Gymnasium and field practices. Three lectures on field games.

Required of Sophomores. ½ credit: 2 hours' work.

PHYSICAL EDUCATION FOR WOMEN

HELEN BARTLETT, *Instructor*

1–a. Physical Education. Outdoor athletic games; general developing exercises; corrective gymnastics.

Required of Freshmen. 1 credit: 2 hours' work.

2–b. Physical Education. Corrective gymnastics; light gymnastics with hand apparatus; figure marching; folk dancing; games.

Required of Freshmen. 1 credit: 2 hours' work.

3–c. Physical Education. A continuation of 2–b including field athletics.

Required of Freshmen. 1 credit: 2 hours' work.

4–a. Physical Education. Outdoor athletic games; corrective gymnastics; folk dancing.

Required of Sophomores. 1 credit: 2 hours' work.

5–b. Physical Education. Corrective exercises; gymnastic marching; light gymnastics with hand apparatus; technique of aesthetic movement; simple aesthetic and character dances; elementary work on heavy apparatus.

Required of Sophomores. 1 credit: 2 hours' work.

6–c. Physical Education. A continuation of 5–b including field games and athletics.

Required of Sophomores. 1 credit: 2 hours' work.

7–a. Physical Education. Outdoor athletic games; corrective exercises.

Required of Juniors. 1 credit: 2 hours' work.

8–b. **Physical Education.** Swedish gymnastics; gymnastic games; advanced technique of aesthetic movement; aesthetic, national and interpretative dances; elementary work on heavy apparatus.

Required of Juniors. 1 credit: 2 hours' work.

9–c. **Physical Education.** A continuation of 8–b including field games and athletics.

Required of Juniors. 1 credit: 2 hours' work.

10–a. **Physical Education.** Outdoor athletic games.

Elective for Seniors. 1 credit: 2 hours' work.

11–b. **Physical Education.** Normal course in play as carried on in the school room and on the playground.

Elective for Seniors. 1 credit: 2 hours' work.

12–c. **Physical Education.** Field games and athletics.

Elective for Seniors. 1 credit: 2 hours' work.

13–a. **Personal Hygiene.** A short study of the laws of health; the means of improving the physical and mental efficiency of the body; individual responsibility for race progress.

Required of all women Freshmen. 2 credits: 2 recitations.

MILITARY ARTS

HARVARD M. HALLS, *Major*
JAMES HAYES, *Sergeant*
GUSTAVE WOLFF, *Sergeant*

The object of military instruction is to qualify students for the performance of the duties of commissioned officers.

The courses are required of freshmen and sophomores, and elective for juniors, seniors and graduate students.

Exemptions or permission to be absent, except for physical disability, cannot be accorded to freshmen and sophomores; and any student who is absent from any part of the instruction will be required, subsequently, to make up the omitted training or its equivalent before being credited with the number of units necessary for graduation.

Reserve Officers' Training Corps

All physically fit male students entering college, unless excused for proper cause by the college authorities, are members of the Reserve Officers' Training Corps. The first two years of military training in this or any equivalent institution constitute the Basic Course. Such men as show a proper interest in the Basic Course may be selected for further training by the President of the College and the Professor of Military Science. The advance course consists of the third and fourth years of military training.

For all men in the R. O. T. C. the government furnishes the following equipment without cost to the student.

Each man will receive the following:

1 U. S. Rifle, model 1917.	1 Coat, wool, O. D.	$9.79
1 Bayonet.	1 Breeches, wool, O. D.	6.32
1 Scabbard.	1 Shoes, russet or marching, pair	4.65
1 Gun sling.	1 Shirt, wool, O. D.	3.50
1 Cartridge belt (web).	1 Overcoat	13.56
1 Pack carrier.	1 Leggins, canvas, pair	1.05
1 Haversack.	1 Hat	2.00
1 First aid pouch.	2 Collar ornaments	.07
1 Bacon can.	1 Hat Cord, R. O. T. C.	.09
1 Canteen.	1 Belt	.23
1 Canteen cover.		
1 Condiment can.		
1 Cup.	Total value	$41.26
1 Knife.		
1 Fork.		
1 Spoon.		
1 Meat can.		

Those students who are selected for the advance course and who agree to attend the Summer Training Camps during the summer vaca-

tions following the completion of their junior and senior years are given an allowance of 40 cents a day as commutation of subsistence. This allowance is paid quarterly and covers the two years at college during membership in the advanced course. This amounts to approximately $118 in cash a year.

The student is not required by reason of membership in the Reserve Officers' Training Corps to enter into any agreement to continue in college a definite length of time. He has the same liberty to leave college as though he were not a member. In order to receive the commutation of subsistence during the advanced course, he must agree to attend two summer training camps for a period of four weeks each providing he remains in college. These camps, in the regular order, will come at the end of his third and fourth years of military training. It may be possible, however, under certain regulations, to substitute camps at the end of the first and second year for the required camps in the advanced course.

The summer training camps are organized by bringing together the students from the different colleges which maintain units of the R. O. T. C. These camps will be most interesting and instructive. The government makes an additional allowance for clothing to men who attend. It also furnishes them transportation to and from the camp of instruction, or mileage therefor at the rate of 4 cents a mile. Excellent food is provided. Moral conditions are carefully controlled by the regular army officers in charge. In short, the camps, together with the other military instruction the student gets, not only offer opportunity for his physical and mental development, but offer it at no expense to him.

It is presumed that each member of the Reserve Officers' Training Corps will have taken before graduation at least one course or equivalent credit in either French, or German, or Spanish.

Special courses can no doubt be arranged from time to time to assist in developing specialists for duties other than those prescribed for reserve officers of the mobile army.

COURSE OF TRAINING FOR INFANTRY UNITS OF THE SENIOR DIVISION

No credit in Military Art shall be given toward graduation for completion of less than the three terms of each year in which it is elected.

1–a. Military Art. Practical. Weight 10. Physical drill (Manual of Physical Training—Koehler); Infantry drill (U. S. Infantry Drill Regulations), to include the School of the Soldier, Squad, and Company, close and extended order. Theoretical.

Theoretical. Weight 4. Military organization (Tables of Organization); map reading, theory of target practice.

Required of Freshmen. 1½ credits: 1 recitation; 3½ hours' drill.

2-b. **Military Art.** Practical. Weight 10. Physical drill (Manual of Physical Training—Koehler); preliminary instruction sighting position and aiming drills, gallery practice, nomenclature and care of rifle and equipment. First aid instruction.

Theoretical. Weight 4. Service of security, personal hygiene, theory of target practice, individual and collective (use of landscape targets made up by U. S. Military Disciplinary Barracks, Fort Leavenworth, Kans.), camp sanitation for small commands.

Required of Freshmen. 1½ credits: 1 recitation. (Drill required for this subject is given during the fall and spring terms.)

3-c. **Military Art.** Practical. Weight 10. Physical drill (Manual of Physical Training—Koehler); infantry drill (U. S. Infantry Drill Regulations), to include School of the Battalion, special attention devoted to fire direction and control; ceremonies; manuals (Part V, Infantry Drill Regulations); Bayonet combat; intrenchments (584–595, Infantry Drill Regulations), range practice.

Theoretical. Weight 4. Lectures, general military policy as shown by military history of United States and military obligations of citizenship; service of information; combat (to be illustrated by small tactical exercises); United States Infantry Drill Regulations, to include School of the Company.

Required of Freshmen. 1½ credits: 1 recitation; 3½ hours' drill.

4-a. **Military Art.** Practical. Weight 10. Physical drill (Manual of Physical Training—Koehler); infantry drill to include School of Company and Battalion, close and extended order ceremonies (Part IV, Infantry Drill Regulations), combat firing.

Theoretical. Weight 4. United States Infantry Drill Regulations, to include School of the Battalion and combat (350–622); Small-Arms Firing Regulations; lectures, general military policies as shown by military history of the United States and military obligations of citizenship.

Required of Sophomores. 1½ credits: 1 recitation; 3½ hours' drill.

5-b. **Military Art.** Practical. Weight 10. Physical drill (Manual of Physical Training—Koehler); infantry drill to include School of the Company (close order), signaling, semaphore and flags, first aid. Work on sand table by constructing to scale, intrenchments, field works, obstacles, bridges, etc., comparison of ground forms (constructed to scale) with terrain as represented on map. Indoor range practice.

Theoretical. Weight 4. Map reading, camp sanitation, and camp expedients, military history (recent), patrols, etc.

Required of Sophomores. 1½ credits: 1 recitation. (Drill required for this subject is given during the fall and spring terms.)

6–c. Military Art. Practical. Weight 10. Physical drill (Manual of Physical Training—Koehler) infantry drill to include School of Company, Battalion and Regiment, ceremonies, trenches (outdoors). Range practice (outdoors), combat firing, bayonet combat, marches.

Theoretical. Weight 4. Service of security and information (illustrated by small tactical problems in patrolling, advance guards, rear guards, flank guards, trench and mine warfare, orders, messages, and camping expedients); marches and camps (Field Service Regulations and Infantry Drill Regulations).

Required of Sophomores. 1½ credits: 1 recitation; 3½ hours' drill.

7–a. Military Art. Practical. Weight 13. Duties consistent with rank as cadet officers or non-commissioned officers in connection with practical work and exercises laid down for the unit or units. Military sketching. Physical drill (Manual of Physical Training—Koehler).

Theoretical. Weight 11. Minor tactics; field orders (studies in minor tactics, United States School of the Line); map maneuvers. Weight 8. Company administration, general principles (paper and returns). Weight 1. Military history. Weight 2.

Elective for Juniors. 3 credits: 2 recitations; 3½ hours' drill.

8–b. Military Art. Practical. Weight 13. Physical drill (Manual of Physical Training—Koehler); Military Sketching. Duties consistent with rank as cadet officers or non-commissioned officers in connection with practical work and exercises laid down for the unit or units.

Theoretical. Weight 11. Minor tactics (continued); map maneuvers. Weight 8. Elements of international law. Weight 2. Property accountability; method of obtaining supplies and equipment (Army Regulations). Weight 1.

Elective for Juniors. 3 credits: 2 recitations. (Drill for this subject is given during the spring and fall terms.)

9–c. Military Art. Practical. Weight 13. Duties consistent with rank as cadet officers or non-commissioned officers in connection with the practical work and exercises scheduled for the unit or units. Military sketching. Physical drill (Manual of Physical Training—Koehler). Theoretical. Weight 13. Army paper work (New forms).

Elective for Juniors. 3 credits: 2 recitations; 3½ hours' drill.

10–a. Military Art. Practical. Weight 13. Duties consistent with rank as cadet officers or non-commissioned officers in connection with the practical work and exercises scheduled for the unit or units. Military sketching. Physical Training (Manual of Physical Training—Koehler).

Theoretical. Weight 11. Tactical problems, small forces, all arms combined; map maneuvers, court-martial proceedings (Manual of Courts-martial). International relations of America from discovery to present day; gradual growth of principles of international law embodied in American diplomacy, legislation, and treaties.

Elective for Seniors. 3 credits: 2 recitations; 3½ hours' drill.

11-b. **Military Art.** Practical. Weight 13. Military sketching, physical training (Manual of Physical Training—Koehler). Duties consistent with rank as cadet officers and non-commissioned officers in connection with the practical work and exercises scheduled for the unit or units.

Theoretical. Weight 11. Lectures: Psychology of war and kindred subjects. General principles of strategy only, planned to show the intimate relationship between the statesman and the soldier (not to exceed 7 lectures).

Elective for Seniors. 3 credits: 2 recitations. (Drill for this subject is given during the spring and fall terms.)

12-c. **Military Art.** Practical. Weight 13. Military sketching, physical training (Manual for Physical Training—Koehler). Duties consistent with the rank of cadet officers and non-commissioned officers in connection with the practical work and exercises scheduled for the unit or units.

Theoretical. Weight 11. Tactical problems (*continued*); map maneuvers. Rifle in war. Lectures on military history and policy; events of late war.

Elective for Seniors. 3 credits: 2 recitations; 3½ hours' drill.

COAST ARTILLERY UNIT

New Hampshire College expects to offer for the first time beginning with September 1919, a course of instruction for the Coast Artillery Unit. Special subject matter will be included in the subject of physics, mathematics, and mechanics, to meet the requirements of this course so that but little new subject matter will be necessary for students taking engineering.

The Government will furnish a staff of five men, 1 Officer, 1 Sergeant (with the training of a Sergeant Major), 1 Sergeant (Motor Mechanic), and 2 Privates (trained as Gun Mechanics or Motor Mechanics).

The Government will furnish the following equipment: One gun and limber, with accessories, of each of the following types: 155 mm. Gun (G. P. F.); 8″ Howitzer and platform; each type of trench mortar available; 1 Anti-aircraft gun and mount; 1–37 mm. Rifle.

Motor Transportation: 1–2–½ ton caterpillar tractor; 1–5 ton caterpillar tractor; 1–10 ton caterpillar tractor; 2 trucks, cargo, Q. M. C.; 2 motor cycles with side cars; 1 artillery repair truck.

THE TWO-YEAR COURSE IN AGRICULTURE

FREDERICK W. TAYLOR, *Dean*

This course, established by the state legislature in 1895, provides an opportunity for those students who do not have the time, money or preparation to take a four-year college course, to secure a training for their life work.

The course is specially arranged and suited for the young, bright boys of the farm, who expect to make a business of some branch of agricultural or horticultural work. Although it is open to students who have had no previous training on the farm, the entrance of such is not encouraged because of their lack of practical experience. By independent work and close application, however, inexperienced students sometimes pass the course with credit.

The year's work closes the last week in March, so as to enable the students to get home for the spring work on the farm or to accept other positions for the summer. This short school year also permits nearly six months' time for those students who are dependent upon their own resources to earn money for the following year.

The courses of study and the classes of the two-year course are separate and distinct from those of the four-year courses. The work of the first year is largely preparatory, being a study of the sciences underlying agriculture, together with some elementary agricultural and horticultural work. The second year contains optional studies, so that it is possible for students to specialize in animal husbandry, poultry, dairy husbandry, horticulture or forestry. Ten hours a week on the average are spent in practical work on the farm, in the barn, greenhouses, shops or forest.

Admission.—The course is open to those having a fair knowledge of reading, spelling, writing, arithmetic, English grammar, geography and history of the United States. Applicants under eighteen years of age, who do not present high school or other satisfactory certificates to show their

proficiency in these subjects, may be given entrance examinations on Tuesday afternoon and Wednesday morning of the opening week of college. Applicants who are over eighteen years of age will be admitted without examination.

Expenses.—The expenses of the course will vary with the taste and frugality of the students and the kind of accommodations which they secure. The total average expense for the year, if the student holds a scholarship, is not far from $300. Many students by working for their board or room rent, or by doing various kinds of work about the college or village, are able to go through the year with a cash outlay not exceeding $150. However, as a rule, such students are either men of exceptional physical alertness, or those who are quick to seize opportunity.

Graduation.—No degree is given at the end of the course, but a certificate of graduation is issued upon its completion or the completion of its equivalent.

Students graduating from the two-year course must present to the dean of the agricultural division on or before the second Tuesday preceding their graduation satisfactory evidence of having had practical experience in farm work, either through having lived on a farm for at least two years subsequent to the age of 12, or through having worked on a farm for at least four months subsequent to the age of 15.

Students graduating from this course in 1920 must have at least 72 credit hours.

TWO-YEAR COURSE OF STUDY

First Year

	First Term ("A")	Second Term ("B")
Grammar and El. Composition (Eng. 201–a, 202–b)	3	3
Elements of Botany (Bot. 201–a)	3	
Fungus Diseases of Plants (Bot. 202–b)		2
Chemistry (Chem. 201–a)	3	
Farm Dairying (D. H. 201–a)	3	
Fruit Growing (Hort. 201–a)	3	
Physiology and Hygiene (Zool. 201–a)	3	
Types and Breeds (A. H. 201–b)		4
Agricultural Drawing (Draw. 201–b)		2
Economic Entomology (Ent. 201–b)		3
Forge (Shop 202–b)		1
Wood Work (Shop 201–b)		2
Military Art (M. A. 1–a, 2–b)	1½	1½
Physical Education	½	½
	20	19

Second Year

Farm Equipment (Agron. 201–a)	3	
Soils (Agron. 203–b)		3
Field Crops (Agron. 202–a)	3	
Manures and Fertilizers (Agron. 204–b)		3
Farm Forestry (For. 201–a)	3	
Feeds and Feeding (A. H. 202–b)		3
Farm Poultry (P. H. 201–a)	3	
Elementary Physics (Phys. 201–b)		3
Military Art (M. A. 4–a, 5–b)	1½	1½
Physical Education (P. E. 54–a, 55–b)	½	½
Electives from subjects listed below	4	4
	18	18

Anatomy of Farm Animals (A. H. 203–a)	3	
Milk Production (D. H. 202–a)	3	
Buttermaking (D. H. 203–a)	3	
Dendrology (For. 2–a)	4	
Elementary Economics (Econ. 201–a)	3	
Vegetable Gardening (Hort. 202–a)	3	
Greenhouse Management (Hort. 203–a)	3	
Farm Management (Agron. 205–b)		3
Animal Diseases (A. H. 204–b)		3
Animal Breeding (A. H. 205–b)		3
Market Milk (D. H. 204–b)		3
Cheese and Ice Cream (D. H. 205–b)		4
Forest Mensuration (For. 6–b)		4
Home Decoration (Hort. 204–b)		3
Orchard Problems (Hort. 205–b)		2
Farm Poultry (P. H. 202–b)		3

*DESCRIPTION OF STUDIES OF TWO-YEAR COURSE IN AGRICULTURE

AGRONOMY

FREDERICK W. TAYLOR, *Professor*

201–a. Farm Equipment. This subject will include the mapping of farms, leveling for drains, a study of farm implements and of farm buildings. Practical exercises are given in map making, laying out drains, comparing farm machines, rope splicing, etc. Professor Taylor.

Required second year. 3 credits: 2 recitations; 1 laboratory.

202–a. Field Crops. Lectures and recitations on the culture, uses and value of the field crops grown in New England. Laboratory practice will include seed testing, seed identification, corn and potato judging, hay judging, and a study of the different legumes, grasses and grains. Assistant Professor Eastman.

Required second year. 3 credits: 2 lectures; 1 laboratory.

203–b. Soils. Text-book and recitations upon the physical and chemical properties of soils. The subject will be made as practical as possible in its application to farm work. Laboratory experiments will be performed to illustrate the principles studied. Assistant Professor Eastman.

Required second year. 3 credits: 2 recitations; 1 laboratory.

204–b. Manures and Fertilizers. Text-book and recitations upon the constituents of farm manures, the home-mixing of fertilizers, and the modifications required by different soils and crops. Professor Taylor.

Required second year. 3 credits: 3 lectures.

205–b. Farm Management and Accounting. Text-book, lectures and recitations upon different types of farming, size of farms, cropping systems, live-stock problems, marketing farm products, choice of a farm, and farm records and accounts. Practical work in laying out farms, keeping cost accounts on farms, and analyzing and organizing the farm business. Assistant Professor Eastman.

Elective second year. 3 credits: 2 lectures; 1 laboratory.

* Only Two-Year students in Agriculture are admitted to these courses, except by special arrangement with the Dean.

ANIMAL HUSBANDRY

201–b. Types and Breeds of Live Stock. A study of the different breeds of horses, cattle, sheep, and swine in respect to their origin, history, development, characteristics, and adaptability to different conditions of climate and soil. One afternoon each week is devoted to judging the different breeds. Assistant Professor Fawcett.

Required first year. 4 credits: 3 lectures; 1 laboratory.

202–b. Feeds and Feeding. An elementary study of the laws of nutrition, the character, composition, and digestibility of feed stuffs, and the methods of feeding different kinds of farm animals. Numerous samples of grains and by-products are used for the purpose of familiarizing the students with the different feed stuffs. Practice is given in calculating rations for various purposes. Assistant Professor Fawcett.

Required second year. 3 credits: 2 recitations; 1 laboratory.

203–a. Anatomy of Farm Animals. Lectures and recitations upon the form and structure of the domesticated animals. Skeletons, various anatomical specimens, models, charts, and lantern slides are used to make the subject as practical as possible. The purposes of this subject are to show the relation between the skeleton and the form and function of the animal, and to serve as a foundation for the intelligent study of animal diseases and ailments. Professor Eckman.

Elective. 3 credits: 2 recitations; 1 laboratory.

204–b. Animal Diseases. A study of some of the more common economic infectious and non-infectious diseases of farm animals, their prevention and their treatment. Professor Eckman.

Elective. 3 credits: 2 recitations; 1 laboratory.

205–b. Animal Breeding. A study of the principles and practices of animal breeding. Practice is given in tracing pedigrees. Assistant Professor Fawcett.

Elective second year. 3 credits: 2 recitations; 1 laboratory.

BOTANY

201–a. Elements of Botany. In this subject the student is given a succinct account of the form and structure of plants and of how plants grow and feed.

Required first year. 3 credits: 1 lecture; 2 laboratories.

202–b. Fungous Diseases of Plants. The principal fungous diseases, their cure and their prevention. Associate Professor Werkenthin.

Required first year. 2 credits: 1 lecture; 1 laboratory.

CHEMISTRY

201–a. Elementary Applications. An elementary study, with special reference to the elements of plant food, composition of fertilizers, elements subject to exhaustion in soils, etc. Mr. Fogg.

Required first year. 2 credits: 2 recitations.

DAIRY HUSBANDRY

201–a. Farm Dairying. A general survey of the field of dairy husbandry. Such topics as the use of the Babcock test, farm separators, farm buttermaking and farm cheesemaking, and marketing dairy products, are included. Mr. DePew.

Required first year. 3 credits: 2 lectures; 1 laboratory.

202–a. Milk Production. The field of dairy husbandry in its relation to the producer. Feeding dairy animals; systems of herd feeding; silage and soiling; raising dairy animals; dairy herd development; dairy barns; advanced registry management; fitting dairy animals for show; dairy cattle judging. Professor Fuller.

Elective second year. 3 credits: 2 lectures; 1 laboratory.

203–a. Buttermaking. A study of the secretion and of the chemical and physical properties of milk; pasteurization; cream ripening, starters, churning; organization and operation of factories. Mr. DePew.

Elective second year. 3 credits: 2 lectures; 1 laboratory.

204–b. Market Milk. Food value of milk; production, handling and distributing of market and certified milk; dairy farm inspection; control of milk supply. Mr. DePew.

Elective second year. 3 credits: 2 lectures; 1 laboratory.

205–b. Ice Cream and Cheesemaking. (1) Lectures and laboratory work covering the manufacture of the more important types of cheese. (2) The making, handling, and marketing of ice cream and ices. Mr. DePew.

Elective second year. 4 credits: 2 lectures; 2 laboratories.

ARCHITECTURE AND DRAWING

201–b. Agricultural Drawing. A brief study of the use of drafting instruments, followed by sketches and working drawings of wood and concrete construction as applied to farm mechanics and farm buildings. Mr. Laton.

Required second year. 2 credits: 2 drawing periods.

ECONOMICS

201–a. **Introduction to Agricultural Economics.** Attention will be given to the essentials of Agricultural Economics as well as to the underlying principles of economics in general. Principles which determine the value of commodities, the rent of land, the wages of labor and the interest of capital, will be considered. Lastly, attention will be given to money and banking in their relation to the industry of agriculture. Assistant Professor McKay.

Required second year. 3 credits: 1 lecture; 2 recitations.

ENGLISH

201–a. **Grammar and Elementary Composition.** Professor Richards.

Required first year. 3 credits: 3 recitations.

201–b. **Grammar and Elementary Composition.** A continuation of 201–a. Professor Richards.

Prerequisite: English 201–a. Required first year. 3 credits: 3 recitations.

ENTOMOLOGY

201–b. **Principles of Economic Entomology**. The relation of the structure and classification of insects to methods of insect control. The preparation and application of insecticides. Spray machinery and appliances. Professor O'Kane and Assistant Professor Cleveland.

Required first year. 3 credits: 2 recitations; 1 laboratory.

FORESTRY

201–a. **Farm Forestry.** The care and management of farm woodlots; log and board sealing; logging and milling; estimating standing timber; protection from fire, insects, fungi, etc.; thinning immature stands; seeding and planting; natural regeneration. Professor Woodward.

Required second year. 3 credits: 2 lectures; 1 laboratory.

HORTICULTURE

201–a. **Fruit Growing.** This subject embraces a study of commercial orcharding. Each fruit is studied with reference to planting, cultivating, pruning, fertilizing, picking, packing, storing and marketing. Associate Professor Wolff.

Elective first year. 3 credits: 1 lecture; 1 recitation; 1 laboratory.

202–a. **Vegetable Gardening.** A study of the commercial methods of vegetable growing. Special attention is given to the home garden. Assistant Professor Hepler.

Elective second year. 3 credits: 1 lecture; 1 recitation; 1 laboratory.

204-b. Home Decoration. A study of ornamental trees, shrubs and flowers; their culture, proper arrangement and decorative value, with special reference to the home surroundings. Assistant Professor Hepler.

Elective second year. 3 credits: 1 lecture; 1 recitation; 1 laboratory.

205-b. Orchard Problems. This subject deals with the principal problems of farm and commercial orchard management. It is designed to show the application of the principles of fruit growing to practical conditions. Professor Gourley.

Elective second year. 2 credits: 2 lectures.

203-a. Greenhouse Management. Combined lecture, demonstration and laboratory work in greenhouse management. Assistant Professor Hepler.

Elective second year. 3 credits: 1 lecture; 1 recitation; 1 laboratory.

POULTRY

201-a. Farm Poultry. A general subject designed especially for Two-Year students who are going back to the farm to take up practical poultry work. The subject will include work in managing, feeding, housing, breeding, incubation, brooding, and marketing, with laboratory work as practical as can be made. Associate Professor Richardson.

3 credits: 2 lectures; 1 laboratory.

202-b. Farm Poultry. Continuation of 201-a. Associate Professor Richardson.

3 credits: 2 lectures; 1 laboratory.

PHYSICS

201-b. Elementary Physics. The application of mechanics, heat and electricity to the more important practical devices. The laboratory work will consist of experiments in the laws of physics. Professor Howes.

3 credits: 2 recitations; 1 laboratory.

SHOP WORK

201-b. Wood Work. Farm carpentry and joinery. Care use of tools, making of implements for the farm, and care of lumber on the farm. Mr. Batchelder.

Required first year. 2 credits: 2 laboratories.

202-b. Forging. This is a study in the forging of iron and steel and is designed to teach the operation of drawing, upsetting, welding,

twisting, splitting, and punching. A study is made of the construction, care and management of the forge and instruction is given in tempering, case hardening and annealing.

Required first year. 1 credit: 1 laboratory.

ZOÖLOGY

201-a. Human Anatomy and Physiology. A general survey of the structure and physiology of the human body. The most important principles of hygiene will be pointed out from time to time as various systems are discussed. Mr. ——.

Required first year. 3 credits: 3 lectures.

NEW HAMPSHIRE AGRICULTURAL EXPERIMENT STATION AND EXTENSION SERVICE

JOHN C. KENDALL, *Director*

EXPERIMENT STATION

Most of the agricultural experiment stations of the country, including the New Hampshire station, were founded in 1888 by an act of congress, approved March 2, 1887, known as the Hatch act, in honor of its author. This act appropriated fifteen thousand dollars ($15,000) annually for the maintenance of an agricultural experiment station in each state. This act provides:

"That it shall be the object and duty of said experiment stations to conduct original researches or verify experiments on the physiology of plants and animals; the diseases to which they are severally subject with the remedies for the same; the chemical composition of useful plants at their different stages of growth; the comparative advantages of rotative cropping as pursued under a varying series of crops; the capacity of new plants or trees for acclimation; the analysis of soils and water; the chemical composition of manures, natural and artificial, with experiments designed to test their comparative effects on crops of different kinds; the adaptation and value of grasses and forage plants; the composition and digestibility of the different kinds of food for domestic animals; the scientific and economic questions involved in the production of butter and cheese; and such other researches or experiments bearing directly on the agricultural industry of the United States as may in each case be deemed advisable, having due regard to the varying conditions and needs of the respective states and territories." The act also provides that the results of such work shall be published in bulletins and reports.

A further endowment of the experiment stations with federal funds to provide specifically for research work was made by the Adams act, passed by congress and approved

March 16, 1906. The appropriation received under the provision of the Adams law now amounts to $15,000 each year. This appropriation is specifically limited to the "necessary expenses of conducting original researches or experiments," and the rulings of the United States Department of Agriculture, which is vested with the supervision of the expenditures under this act, require that this appropriation be spent in fundamental investigations or researches to determine the underlying causes and principles of agricultural science, rather than for mere experiments to secure results of immediate practical application as contemplated under the Hatch Act appropriation. The purposes of the two acts are, therefore, supplementary but distinct.

The New Hampshire Agricultural Experiment Station is organized as a department of the New Hampshire College of Agriculture and the Mechanic Arts, and is administered by a board of control, elected by its board of trustees.

The publications of the station comprise 190 bulletins of the regular series and 19 circulars, 13 technical bulletins, 11 scientific contributions, and 4 school bulletins. The bulletins are issued at irregular intervals and are sent to all residents of New Hamsphire requesting them. The station has a mailing list of 23,000 addresses. Back numbers will be sent as long as the supply lasts. Lists of available publications will be sent upon requests.

The above quotations taken from the Hatch and Adams acts are sufficient to indicate the true function of this and other experiment stations called into being by the passage of those laws. At first the experiment stations found it difficult to resist the popular demand made upon them to enter the extension field, to the neglect of research, but it is to the credit of the officials having the directing and executing of those laws in charge that our stations have proved true to their trust. If the stations had not devoted their energies to the fields of original research our agriculture could not possibly be upon the high plane which it occupies today.

The introduction of the extension service as a recognized part of the work of this and other similar institutions only serves to emphasize the importance of experiment station work. In our haste to produce immediate results we sometimes lose sight of the value of the work of our experiment stations. We do not realize the debt agriculture owes to the scientists who are willing to devote their life work to the study of one subject, or at most a very few subjects, without thought of personal ambition and advancement, but simply seeking after truth and the advancement of science.

EXTENSION SERVICE

Under the provisions of an act of congress approved May 8, 1914, New Hampshire, the same as every other state, receives the sum of $10,000 annually from the federal government for supplementing and strengthening the extension work of the Agricultural College.

In addition to the annual appropriation of $10,000, each state shares in increased allotments for seven years in the proportion which the rural population of each state bears to the total rural population of all the states as determined by the next preceding federal census, provided the state shall appropriate an equal sum. If New Hampshire fulfills her part in carrying out the provisions of the Smith-Lever law, the state will receive in 1922–23 and thereafter, from the federal government, annually the sum of $24,572, for conducting coöperative demonstration work in agriculture and home economics.

This financial assistance from the federal government comes to New Hampshire at a time when state and other funds are inadequate for meeting the demands which are constantly being made upon the college, and will make it possible for the extension service to strengthen and develop its work along all lines and render a still greater service to the state.

The organization of a distinct department or division of extension service in connection with our state colleges and

universities gives proper recognition to a threefold function; viz., teaching resident students, conducting investigations, and carrying information and assistance from the college and station into all parts of the state.

The extension service with its own corps of forty-nine men and women relieves the college teaching staff and station workers from much of the miscellaneous extension work which they, of necessity, have been compelled to carry on in the past.

This new organization permits the selection and assigning of such duties to the individual as he or she seems best fitted to perform, which will work for efficiency in all three departments or divisions. We have the Smith-Lever law to thank for hastening the time of bringing these things to pass.

The United States Department of Agriculture has created what is known as the States Relations Service to take charge of and coöperate with the several states in carrying out the provisions of the Smith-Lever law. Having the extension work of each state closely associated with the work of the United States Department of Agriculture through the States Relations Service is a very potent factor in unifying and strengthening the extension work throughout the United States.

The last few years have witnessed a remarkable growth in the development of improved methods of teaching agriculture. There has been a decided change in the attitude of the public toward the work of institutions offering training in agriculture, which has rendered possible the unprecedented progress actually made by state institutions where agriculture is being taught.

The extension service is intended to serve as a medium by which to take the teaching of the college classroom and the results derived from the experiment station fields and laboratories directly to the homes and to the fields of the farmers of the state. It is very difficult to place any just estimate upon the value of such service to a state or to the nation. It is recognized today as never before that upon the prosperity of the farmer depends quite largely the

general prosperity of all classes of people. The present high cost of living has done much to attract the attention of people to the relation which the farmer and his interests bear to them personally.

What the colleges and universities are to those young men and young women who come within their walls, the extension service is, only to a lesser degree, to the thousands who are beyond the reach of the classroom.

DEGREES AND HONORS, 1918

HONORARY DEGREES

Henry W. Keyes, LL.D.
Huntley N. Spaulding, D.Sc.
John B. Jameson, D.Sc.
James Mortimer Leonard, M.S.

BACHELOR OF SCIENCE

Agricultural Division

Eloi Augustus Adams ..... Durham
Maurice Haynes Benson ..... Lebanon
Ralph deRochemont Brackett ..... Greenland
Charles Bernard Broderick ..... Exeter
Charles Higgins Coburn ..... Tyngsborough, Mass.
Stanley Hatch Dalton ..... Nashua
Otis Raymond Garland ..... Hampton
Fred William Hall ..... Center Strafford
Ernest Winfield Hardy ..... Contoocook
John Edwin Humiston ..... Hanover Center
Raymond Walch Hutchinson ..... Reed's Ferry
Howard Thompson Irvine ..... Exeter
Weston Harvey Jeffers ..... Pike
Rodney Solon Jenkins ..... Barnstead
Lester Edwin Merrill ..... Lebanon
John Everett Miltimore ..... Derry
Robert Hamilton Sawyer ..... Bradford, Mass.
Earl Louis Scovell ..... Haverhill, Mass.
Lewis Churchill Swain ..... Exeter
Clarence Benjamin Wadleigh ..... Newton
Norman Francis Whippen ..... Kingston
Howard Willand ..... East Wolfeboro
Claiborne Hart Young ..... Wilton

Arts and Science Division

Doris Lillian Bragdon ..... Exeter
Helen Marion Bugbee ..... Claremont
Mary Olive Cushing ..... Concord
Josephine Marguerite Furber ..... Laconia

Ruth Whitney Hadley.....Durham
Florence Julia Harris.....Laconia
Martha Luena Hoitt.....Durham
Irene Meyers Huse.....Laconia
Della May Ingerson.....Starrking
Elsie Louise King.....Dover
Erma Masso Lary.....Berlin
Raymond Soule Morrill.....Warren
Ralph Poor Nevers.....Salem, Mass.
Ethel May Walker.....Concord

Engineering Division

John Arthur Baker.....Claremont
Richard Cilley Bartlett.....Derry Village
Rodney Clyde Coburn.....Lowell, Mass.
James William Dodge.....Contoocook
Louis Dreller.....Portsmouth
Charles Butterworth Durgin.....Wilton
Heman Charles Fogg.....Concord
Maurice Channing George.....Danville
Merton Burgess Lane.....Ashburnham, Mass.
Elmer Nason Sanders.....Durham
Archie McQuesten Spencer.....Plymouth
Robert Chapman Stimson.....New London
Rollins Wentworth.....Dover

BACHELOR OF ARTS

George Nason Blatchford.....Hampton Falls
Reginald Foster Cahalane.....Walpole
Malcolm Barrett Clark.....Bethlehem
Eva Emma Eastman.....Concord
Mildred Margaretta Flynn.....Dover
Edith Emily Foss.....Dover
Marion Susan Gilson.....Windham
Lucille Adeline Gove.....Durham
Hilbert Goodrich Hewey, Jr.....Lewiston, Me.
Joel William Hofstead.....Winchendon, Mass.
Fred John Howe.....Exeter
Russell Cyprian Jones.....Exeter
Marguerite Mae Merrill.....Nashua
John Joseph Parsons.....Somersworth
Clesson Willard Richardson.....Marlborough
Susan Helen Scott.....Durham
Hazel Searles Winn.....Dover

TWO YEAR CERTIFICATES IN AGRICULTURE

Herman Russell Fletcher . . . . . Plymouth
George Webster Harris . . . . . Pelham
Orton Francis Hill . . . . . Warner
William Henry Irvine . . . . . Exeter
Bleecker Lloyd Wagner . . . . . Waban, Mass.
Earl Cass Whipple . . . . . Goffstown

As of the Class of 1917

Edwin John Andrew . . . . . Concord

HONOR LIST FOR 1918

SPECIAL HONOR

Average of 90 or more for the year's work

1918

Heman Charles Fogg.
Russell Cyprian Jones.
Hazel Searles Winn.

1919

Dorothy Hanson.
Frank Adin Joy.

1920

Esther Lucile Brown.
Margaret Sullivan Cote.

1921

Mary Anne Catherine Boyd.
Louise Burdette.
Harriet May Ford.
Eleanor Frances Leahy.
Dorothy Pauline Wentworth.

HONOR

Average of 85 or more for the year's work

1918

Eloi Augustus Adams.
Malcolm Barrett Clark.
Eva Emma Eastman.
Mildred Margaretta Flynn.
Edith Emily Foss.
Josephine Marguerite Furber.
Marion Susan Gilson.
Ruth Whitney Hadley.
Florence Julia Harris.
Joel William Hofstead.
Martha Luena Hoitt.
Irene Meyers Huse.
Elsie Louise King.
Elmer Nason Sanders.
Susan Helen Scott.
Ethel May Walker.
Rollins Wentworth.
Claiborne Hart Young.

1919

Muriel Chamberlin.
Mary Robinson Cressey.
Otto Winfred Davis.
Cecil Calvert Dustin.
Alice Bowdoin Kemp.
Frank William Prescott.
Miriam Augusta Sanders.
William Crawford Wheeler.

1920

Helen Miller Barton.
John Jacob Bloomfield.
Harry Jonathan Harling.
Ethelle Meserve Hayes.
Florence Aura Kelley.
Frances Kling.
Chester Allen Scammon.
Jennie Mae Shannon.
Phebe Key Stryker.

1921

Gordon Roger Booth.
Dorothy Chase.
Fred Levi Chase.
Lillian Frances Curtis.
Rita Beatrice Fluet
Leland Elford Grant.
Florence Durkie Hatch.
Lyle Clayton Jenness.
Ernest Parker Little.
Donald Potter Mattoon.
Helen Hawkes Meader.
Dorothy Miller.
Janet Ward.
Edmund George Riel.

PRIZE RECORD FOR 1918

BAILEY PRIZE

Given by Dr. C. H. Bailey, Class of '79, and E. A. Bailey, Class of '85

Heman Charles Fogg, Concord.

ERSKINE MASON MEMORIAL PRIZE

Howard Thompson Irvine, Exeter.

CHASE-DAVIS MEMORIAL MEDALS

Gold Medal

Charles Bernard Broderick, Exeter.

Silver Medal

Howard Thompson Irvine, Exeter.

LILIAN S. EDWARDS PRIZE

Frances Kling, Concord.

VALENTINE SMITH SCHOLARSHIPS

John Jacob Bloomfield, '20, Dover.
Harriet May Ford, '21, South Danbury.
Edson Martin Bailey, '22, Sunapee.

ROSTER OF COMMISSIONED OFFICERS

BATTALION OF RESERVE OFFICERS' TRAINING CORPS

1918–1919

Commandant, Major Harvard N. Halls, U. S. A.

FIELD AND STAFF

Major B. F. Hills, *Commanding Battalion.*

COMPANY A

Captain T. R. Butler, *Commanding Company.*
First Lieutenant R. S. Coker, *duty with Company.*
Second Lieutenant W. E. Knox.

COMPANY B

Captain C. J. O'Leary, *Commanding Company.*
First Lieutenant Guy E. Plaistead, *duty with Company.*
Second Lieutenant Chas. W. Sheperd.

COMPANY C

Captain C. A. Scammon, *Commanding Company.*
First Lieutenant N. E. Meras, *duty with Company.*
Second Lieutenant S. L. Ajermian.

COMPANY D

Captain A. S. Baker, *Commanding Company.*
First Lieutenant G. W. Patten.
Second Lieutenant Geo. McKenzie.

STUDENTS, 1918-1919

The letter "A" following the names of students indicates that such students were members of the Army Section of the Students' Army Training Corps. The letter "N" following the names of students indicates that such students were members of the Navy Section of the Students' Army Training Corps. An asterisk before the "A" or "N" indicates that the student was in college only during the time he was a member of the Students' Army Training Corps. A double asterisk before the "A" or "N" indicates that the student applied for induction in the Students' Army Training Corps but was not inducted and that he failed to return to college for further work.

The abbreviations indicating the course stand for the following: *a. h.* and *d.*—Animal Husbandry and Dairy; *for.*—Forestry; *hort.*—Horticulture; *gen. a.*—General Agriculture; *a.*—Freshmen and Sophomores in Agriculture; *ch. e.*—Chemical Engineering; *m. e.*—Mechanical Engineering; *e. e.*—Electrical Engineering; *a.* and *s.*—General Arts and Science; *h. e.*—Home Economics; *m. a.*—Mechanic Arts.

SENIORS

Name	Section of S. A. T. C.	Course	P. O. Address
Ashford, Olive Irene		*h. e.*	*Dover.*
Atwood, Grace Etta		*a.* and *s.*	*Worcester, Mass.*
Baker, Margaret Edna		*h. e.*	*Littleton.*
Bartlett, Edward Emery	N	*m. e.*	*Derry.*
Belyea, Clement Chipman	A	*ch. e.*	*Newfields.*
Bennett, Charles Alfred		*a.* and *s.*	*Durham.*
Benson, Priscilla		*h. e.*	*Lebanon.*
Caswell, Henry Benson		*m. a.*	*Barnstead.*
Chamberlain, Muriel		*a.* and *s.*	*Berlin.*
Clapp, Arthur Everett		*a.* and *s.*	*Portsmouth.*
Cochrane, Thomas Joseph	N	*ch. e.*	*Ludlow, Mass.*
Cressey, Mary Robinson		*a.* and *s.*	*Dover.*
Davis, Otto Winfred		*a. h.* and *d.*	*Concord.*
Dimond, Blanche Farnum		*h. e.*	*West Concord.*
Doherty, Mildred Eva		*h. e.*	*Derry.*
Durgin, John Frank		*gen. a.*	*Newmarket.*
Dustin, Cecil Calvert		*a. h.* and *d.*	*Rochester.*
Garland, Oscar Leavitt		*a.* and *s.*	*Hampton.*
Glidden, Norman Frank		*gen. a.*	*Alton Bay.*
Grant, Christine Sutherland		*h. e.*	*Plymouth.*
Greenfield, Sara Ella		*a.* and *s.*	*Rochester.*
Hale, Dorothy Adaline		*a.* and *s.*	*Dover.*
Hall, Irene Marguerite		*a.* and *s.*	*Rochester.*

Name	Section of S. A. T. C.	Course	P. O. Address
Hanson, Dorothy		*a.* and *s.*	*Franklin.*
Hoffman, Louis Benjamin	A	*e. e.*	*Manchester.*
Hyde, Lincoln Spencer		*a. h.* and *d.*	*East Kingston.*
Joy, Frank Adin		*m. e.*	*Newfields.*
Kelleher, Mary Ethel		*a.* and *s.*	*Dover.*
Kemp, Alice Bowdoin		*h. e.*	*Kingston.*
Langley, Ada Caroline		*a.* and *s.*	*Durham.*
Lewis, Marion Anna		*h. e.*	*Littleton.*
McCarty, Mary Elizabeth Anna		*a.* and *s.*	*Dover.*
Matthes, Carl Frederick	N	*ch. e.*	*Lawrence, Mass.*
Moody, Alden Howard	A	*ch. e.*	*Concord.*
Nightingale, Gordon Thayer		*gen. a.*	*Moosup, Conn.*
Nudd, Willard Eugene	N	*m. e.*	*Hampton.*
Page, Oral Allen		*a. h.* and *d.*	*Newton.*
Perkins, Caroline May		*a.* and *s.*	*Claremont.*
Petmezas, Constantine A.		*a.* and *s.*	*Portsmouth.*
Pinkham, Madelene Lona		*h. e.*	*Dover.*
Poland, Mary Flora		*a.* and *s.*	*Lebanon.*
Prescott, Frank William		*a.* and *s.*	*Pittsfield.*
Randall, Christine Flora		*a.* and *s.*	*Campton.*
Richmond, Louise Mary		*a.* and *s.*	*Dover.*
Robb, Bernice Aurilla		*h. e.*	*Durham.*
Rogers, Walter Eugene		*a.* and *s.*	*Sanbornville.*
Rumrill, Hamilton		*m. a.*	*Hillsborough.*
Sanders, Miriam Augusta		*h. e.*	*Rochester.*
Seawards, Susie Ethel		*h. e.*	*Dover.*
Shedd, Hazelle Maude		*h. e.*	*Rochester.*
Shillaber, John James		*m. e.*	*Portsmouth.*
Shuttleworth, Melba Johnson		*a.* and *s.*	*West Springfield, Mass.*
Shuttleworth, William Edward		*a. h.* and *d.*	*Portsmouth.*
Sleeper, Clarence Wilson		*a.* and *s.*	*Concord.*
Smith, Gertrude May		*h. e.*	*Epping.*
Smith, Mabel Foster		*h. e.*	*Claremont.*
Stafford, John Fremont	A	*a.* and *s.*	*Berlin.*
Strain, Murray Hartshorn	A	*a.* and *s.*	*Groveton.*
Tilton, Lewis Blake	A	*a. h.* and *d.*	*East Kingston.*
Wakefield, Clement Arthur		*a.* and *s.*	*Biddeford, Me.*
Wetherbee, Emma Louise		*h. e.*	*Milford.*
Wheeler, William Crawford		*for.*	*Starrking.*
White, Alpheus Britton		*a.* and *s.*	*Peterborough.*
Wiggin, Ida Marion		*h. e.*	*Dover.*
Wildes, Karl Leland	N	*m. e.*	*Belmont.*
Williams, Katherine		*h. e.*	*Exeter.*

JUNIORS

Name	Section of S. A. T. C.	Course	P. O. Address
Abbott, Howard Stanley	N	*a.h.* and *d.*	*Wilton.*
Adams, Helen Gertrude		*h. e.*	*Farmington.*
Akerman, Wallace Sheldon		*e. e.*	*Portsmouth.*
Aldrich, Katherine Spurlin		*a.* and *s.*	*Whitefield.*
Bailey, Mary Elizabeth		*a.* and *s.*	*Durham.*
Banister, Rolfe George		*a. h.* and *d.*	*Colebrook.*
Barker, Forest Allen		*ch. e.*	*Nashua.*
Barton, Helen Miller		*h. e.*	*Seabrook.*
Bickford, Gladys Charlotte		*h. e.*	*Gonic.*
Billingham, George Harold	N	*m. a.*	*Boston, Mass.*
Binks, Doris Reba		*a.* and *s.*	*Franklin.*
Blood, Kenneth Darwin		*a. h.* and *d.*	*Claremont.*
Bloomfield, John Jacob		*ch. e.*	*Dover.*
Boutwell, Harley		*a.* and *s.*	*Concord.*
Brierley, Philip	*A	*a.* and *s.*	*Stratham.*
Brooks, Beatrice Azelia		*a.* and *s.*	*Dover.*
Brooks, Frank Arthur		*m. e.*	*Manchester.*
Brown, Arthur Butler		*a. h.* and *d.*	*Fremont.*
Brown, Esther Lucile		*a.* and *s.*	*Newfields.*
Browne, Winnifred Pearl		*a.* and *s.*	*Manchester.*
Bryant, Rachael Leone		*h. e.*	*Portsmouth.*
Burpee, Howard Ainsworth	A	*ch. e.*	*Manchester.*
Burleigh, Lucile Edna		*a.* and *s.*	*Franklin.*
Callender, Benjamin Richard	N	*ch. e.*	*Bethlehem.*
Carr, James Irvin		*ch. e.*	*Hancock.*
Chamberlain, A. Herbert	N	*ch. e.*	*South Natick, Mass.*
Clarke, Daniel Willatowski	A	*gen. a.*	*Schenectady, N. Y.*
Congdon, Neal Harrison	*A	*a.* and *s.*	*Lancaster.*
Cote, Margaret Sullivan		*a.* and *s.*	*Nashua.*
Cree, Leighton Joseph		*a. h.* and *d.*	*Colebrook.*
Cummings, Flora Belle		*h. e.*	*Colebrook.*
Currier, Maurice Emerson	A	*a.* and *s.*	*Dover.*
Davis, Arthur Franklin		*a.* and *s.*	*Portsmouth.*
Dearborn, Hazel Ruth		*a.* and *s.*	*Durham.*
Donahue, Helen Bernardine		*a.* and *s.*	*Waltham, Mass.*
Edgerly, Eva Hester		*a.* and *s.*	*Newmarket.*
Elkins, Dorice White		*h. e.*	*Hampton Falls.*
Emery, Henry Alfred	A	*m. e.*	*Auburn.*
Ewer, Everett Donald	*A	*a.*	*Dover.*
Felker, Harold Perkins	A	*a. h.* and *d.*	*Laconia.*
Fitch, Harold Wakefield	N	*for.*	*Claremont.*
Fitts, Perley Irving	A	*a. h.* and *d.*	*Etna.*

Name	Section of S.A.T.C.	Course	P. O. Address
Foster, Russell Chase	A	*m. e.*	*Fitchburg, Mass.*
Fox, Gordon Lloyd	*A	*a.* and *s.*	*Lisbon.*
Furber, Miriam Louise		*a.* and *s.*	*Wolfeboro.*
Gardner, Celia Hubbard		*a.* and *s.*	*Springfield.*
Gove, Norris Dickinson	N	*m. e.*	*Raymond.*
Greer, Raymond Chase		*a.* and *s.*	*Grasmere.*
Ham, Harold Rudman	A	*a. h.* and *d.*	*Durham.*
Harling, Harry Jonathan	A	*a. h.* and *d.*	*Jaffrey.*
Hayes, Ethelle Meserve		*h. e.*	*Dover.*
Herlihy, Abby Katherine		*a.* and *s.*	*Derry Village.*
Hill, William Rodney		*a.* and *s.*	*Concord.*
Hunt, Esther Hazel		*h. e.*	*Kennydale, Wash.*
Huse, Walter Daniels	A	*m. e.*	*Laconia.*
Jenness, Judith Varney		*a.* and *s.*	*Dover.*
Jenness, Leslie George	N	*ch. e.*	*South Danbury.*
Jones, Elizabeth		*a.* and *s.*	*Union.*
Jones, Lucie Jeanette		*a.* and *s.*	*Milton.*
Joy, Grace Mae		*a.* and *s.*	*Newmarket.*
Kelley, Florence Aura		*a.* and *s.*	*Plaistow.*
Kling, Frances		*a.* and *s.*	*Concord.*
Ladd, Harold Marden		*m. a.*	*Bristol.*
Lane, Chester Linwood	N	*ch. e.*	*Concord.*
Langley, Mildred Mae		*a.* and *s.*	*Durham.*
Lewis, Miriam		*a.* and *s.*	*Chester.*
McQuesten, Ruth Carolyn		*h. e.*	*Manchester.*
Melville, George Donald		*a.* and *s.*	*Hyde Park, Mass.*
Meserve, Jessica Frances		*h. e.*	*Dover.*
Morrill, Clyde Rex		*a.* and *s.*	*Dover.*
Morrison, Cecil Alister		*a.* and *s.*	*Rochester.*
Murphy, Helen Ann		*ch. e.*	*Portsmouth.*
Nelson, Daniel Horace	N	*m. a.*	*Franconia.*
Norris, Edith Priscilla		*h. e.*	*East Derry.*
O'Leary, Jr., Christopher James	A	*a.* and *s.*	*Newfields.*
Otis, Rena Frances		*a.* and *s.*	*Rochester.*
Patten, Gordon Willis		*a.* and *s.*	*Manchester.*
Patterson, Frank Edward		*a.* and *s.*	*Portsmouth.*
Paul, Samuel Henry		*m. e.*	*Wakefield.*
Perkins, Charles Gladstone		*e. e.*	*Portsmouth.*
Pichette, Edward Albert	*N	*e. e.*	*Concord.*
Pike, Otis William	N	*e. e.*	*Antrim.*
Pingree, George Nathan	N	*e. e.*	*New London.*
Plaisted, Guy Edgar	A	*e. e.*	*Portsmouth.*
Rice, Dorothy Frances		*h. e.*	*Dover.*

Name	Section of S.A.T.C.	Course	P. O. Address
Rice, Lee Loughna		*a.* and *s.*	*Grafton, Mass.*
Rumford, Clarence Henry	*A	*a.*	*Newfields.*
Saxton, Marjorie May		*h. e.*	*Manchester.*
Scammon, Chester Allen	A	*m. e.*	*Stratham.*
Shannon, Jennie Mae		*a.* and *s.*	*Epping.*
Smith, Arthur Dean	A	*for.*	*Andover.*
Smith, Deborah Beatrice		*h. e.*	*Newfields.*
Spinney, Willard Ellsworth	N	*ch. e.*	*Concord.*
Stafford, Henry Walton	*A	*a.*	*Berlin.*
Stott, George Phillip	*A	*a.* and *s.*	*Portsmouth.*
Stryker, Phebe Key		*a.* and *s.*	*George's Mills.*
Thompson, Elmer John		*a. h.* and *d.*	*Contoocook.*
Wallace, Grace Ireland		*h. e.*	*Manchester.*
Watson, George Wesley		*e. e.*	*Manchester.*
Weigel, Frederick Albert	N	*e. e.*	*Lawrence, Mass.*
Whipple, Gladys Louise		*a.* and *s.*	*Lebanon.*
Young, Ralph Joy	A	*a. h.* and *d.*	*Dover.*

SOPHOMORES

Aldrich, Kathryn Margaret		*h. e.*	*Lancaster.*
Anderson, Ernest August Franklin		*a.* and *s.*	*New Milford, Conn.*
Arey, Amber Priscilla		*a.* and *s.*	*South Danbury.*
Ayers, Hazel Marguerite		*h. e.*	*Rochester.*
Baker, Albert Samuel		*a.* and *s.*	*Concord.*
Batchelder, George Harold		*a.* and *s.*	*Hampton.*
Beane, Norman Rollins	*A	*ch. e.*	*Newington.*
Bearse, Norman Irving	A	*ch. e.*	*Nashua.*
Bennett, Robert Goodwin	A	*a.*	*Newmarket.*
Blood, Paul Tolman	A	*a.*	*Lisbon.*
Boody, Cecil Webster	A	*a.* and *s.*	*East Barrington.*
Bourdon, Irene Cecile		*a.* and *s.*	*Manchester.*
Boyd, Mary Anne Catherine		*a.* and *s.*	*Dover.*
Brown, Donald Stuart	A	*ch. e.*	*Laconia.*
Brown, Percival Cyrus	N	*m. e.*	*Woodstock.*
Bugbee, Rachel Rice		*h. e.*	*Concord.*
Burdett, Louise		*a.* and *s.*	*Leominster, Mass.*
Burgess, Richard Nelson	A	*a.*	*Nashua.*
Butler, Theodore Rutledge		*a.* and *s.*	*Portsmouth.*
Calpin, Arthur Raymond	**A	*e.*	*Manchester.*
Campbell, Ernest Weston	*A	*a.*	*Gonic.*
Carpenter, Richard Frederick	N	*a.* and *s.*	*Littleton.*
Cavis, Hortense		*h. e.*	*Bristol.*

Name	Section of S.A.T.C.	Course	P. O. Address
Chaplin, Daniel Reed	A	*a.*	*Keene.*
Chase, Dorothy		*a* and *s.*	*Smithtown.*
Child, Roswell Towle	N	*m. e.*	*Pembroke.*
Cleveland, Margaret Lily		*h. e.*	*Stowe, Vt.*
Cohen, Abraham Louis	A	*a.* and *s.*	*Portsmouth.*
Coker, Roland Stanwood	A	*a.* and *s.*	*Salem, Mass.*
Colburn, Ruth Emeline		*a.* and *s.*	*Temple.*
Colburn, Elmer Metford	*A	*a.*	*Somersworth.*
Colton, Leona Brewster		*h. e.*	*Boston, Mass.*
Connell, Morelle Meath		*h. e.*	*Rochester.*
Cotton, John Melville	A	*e. e.*	*Portsmouth.*
County, Lillian Gertrude		*a.* and *s.*	*Manchester.*
Craig, Thomas Jeffers		*ch. e.*	*Portsmouth.*
Cross, Clarence Arthur	A	*a.*	*Derry.*
Currier, Leslie Amos	*A	*prog. a.*	*Claremont.*
Daniels, Maurice Lewis	*A	*a.* and *s.*	*New Boston.*
Davis, Bernard Milan		*a.*	*Antrim.*
Davis, Louise Grosvenor		*a.* and *s.*	*Newton.*
Dodge, Charles Frank	*A	*e. e.*	*Contoocook.*
Dore, Nellie Jemima		*h. e.*	*Mirror Lake.*
Dow, Harold Wright	A	*m. e.*	*Warner.*
Dutton, Evelyn Florence		*h. e.*	*Dracut, Mass.*
Flanders, Dorothy Alice		*a.* and *s.*	*Laconia.*
Fluet, Rita Beatrice		*a.* and *s.*	*Dover.*
Forbes, Harland Clement	A	*e. e.*	*Colebrook.*
Ford, Harriet May		*a.* and *s.*	*South Danbury.*
Franklin, Jeremiah Edward	A	*m. e.*	*Franklin.*
French, Harold Gordon	A	*a.*	*Hudson.*
Gaw, Harold Edmund	*N	*m. e.*	*Manchester.*
Gerrish, Mary Elizabeth,		*h. e.*	*Dover.*
Grant, Leland Elford		*ch. e.*	*Salmon Falls.*
Hanscom, Grace May		*a.* and *s.*	*Somersworth.*
Hanscom, Florence Evelyn		*a.* and *s.*	*South Berwick, Me.*
Harding, Louise Eva		*a.* and *s.*	*West Lebanon.*
Hartwell, Robert William		*a.*	*Littleton, Mass.*
Hatch, Florence Durkee		*a.* and *s.*	*Exeter.*
Hauler, Arthur	A	*m. a.*	*Fitchburg, Mass.*
Hayes, Clifton Russell	*N	*e.*	*Dover.*
Hayward, Charles Prescott	**A	*a.*	*Temple.*
Hedburg, Irving Wilfred		*a.* and *s.*	*Worcester, Mass.*
Helff, Otto Maximilian	N	*a.* and *s.*	*Keene.*
Hennessey, Mary Margeret		*a.* and *s.*	*Dover.*
Hewitt, Ernest Warden		*e. e.*	*Durham.*

Name	Section of S.A.T.C.	Course	P. O. Address
Hill, Benjamin Franklin		*ch. e.*	*Dover.*
Hiscock, J. Austin	**A	*e. e.*	*Conway.*
Hobbs, Ethel Mae		*a.* and *s.*	*Somersworth.*
Hobbs, Horace Estow	A	*a.* and *s.*	*Hampton.*
Holmes, Myron Gerrish	A	*a.*	*Northwood.*
Hubbard, Oliver Jones	A	*a.*	*Walpole.*
Hunt, Raeburn Stanley		*a.* and *s.*	*Cornish Flat.*
Huse, Esther		*a.* and *s.*	*Manchester.*
Johnson, Ralph Nathan		*a.*	*Newport.*
Keene, LaRoy Dwight	A	*e. e.*	*Kittery, Me.*
Kelleher, Helena Katherine		*a.* and *s.*	*Dover.*
Kimball, Ralph Walter	N	*a.* and *s.*	*Milton.*
Knox, Alice Richardson		*a.* and *s.*	*Dover.*
Knox, William Edward		*e. e.*	*Dover.*
Ladd, Bessie Ruth		*a.* and *s.*	*Epping.*
Ladd, Frank Watson	N	*e. e.*	*Contoocook.*
Lagasse, Felix Scott	A	*a.*	*Lockmere.*
Langley, Delia Frances		*a.* and *s.*	*Durham.*
Lannon, John Martin	A	*ch. e.*	*Penacook.*
Leahy, Elinor Frances		*a.* and *s.*	*Somersworth.*
Leavitt, Harold Irving		*e. e.*	*Lowell, Mass.*
Levingston, Oscar	A	*a.* and *s.*	*Concord.*
Levy, Samuel		*a.* and *s.*	*Portsmouth.*
Litch, Richard Corning	N	*e. e.*	*Exeter.*
Little, Ernest Parker	A	*ch. e.*	*Concord.*
Lorden, Earl Eastman	N	*a.* and *s.*	*Gerrish.*
Lyford, Sidney John		*a.*	*Epping.*
McGettigan, Frances Lawrence	A	*a.*	*Wilton.*
McKelvie, Carl Donald	*A	*ch. e.*	*Nashua.*
McKenzie, Jr., George		*m. e.*	*Franconia.*
McWeeney, Annie Madaleine		*a.* and *s.*	*Nashua.*
Madden, Donald Burbank	A	*a.*	*Antrim.*
Marshall, John Samuel	A	*a.* and *s.*	*Kingston.*
Marston, James Richard		*a.*	*Conway.*
Martins, Abilio Pinto	**A	*a.* and *s.*	*Brazil, So. Am.*
Mattoon, Donald Potter	*A	*a.*	*Claremont.*
Meader, Helen Hawkes		*a.* and *s.*	*Dover.*
Meras, Norman Eugene	A	*e. e.*	*Exeter.*
Meserve, Anna Howard		*h. e.*	*Framingham, Mass.*
Mitchell, Basil Joseph		*e. e.*	*Nashua.*
Morrill, Alden Seth	A	*a.*	*East Bethel, Vt.*
Morrill, Edith Grace		*a.* and *s.*	*Penacook.*
Morse, Errol Stanley	A	*a.* and *s.*	*Tilton.*

Name	Section of S.A.T.C.	Course	P. O. Address
Murthur, Charles Bernard		*a.* and *s.*	*Nashua.*
Muzzey, Frank Elbridge	N	*m. e.*	*Derry.*
Newman, Denwood Austin		*ch. e.*	*West Burke, Vt.*
Nightingale, Burgess	A	*a.*	*Durham.*
Parmenter, Draper Watts	A	*a.*	*Hudson.*
Perry, Robert	A	*a.* and *s.*	*Manchester.*
Peterson, Henry Frederick	*A	*e.*	*Manchester.*
Pollard, Shirley Everett	N	*m. e.*	*Newport.*
Prescott, Frank Dunning	*N	*e.*	*Franklin.*
Reed, Harold Elwin	*A	*e. e.*	*Newport.*
Rees, Walford Tupper	*A	*a.* and *s.*	*Nashua.*
Remick, Frances Elizabeth		*a.* and *s.*	*Portsmouth.*
Richardson, Raymond Bradbury,		*a.*	*Gonic.*
Riel, Edmund George	A	*a.*	*Laconia.*
Rogers, Urban Charles	*A	*prog. a.*	*Berlin.*
Rollins, Howard Arthur	*A	*a.* and *s.*	*West Alton.*
Sawyer, Alfred Henderson		*a.*	*Concord.*
Scott, Alice Hovey		*a.* and *s.*	*Durham.*
Scovell, Paul Hayward	A	*m. e.*	*Haverhill, Mass.*
Shand, Dorothy Belle		*a.* and *s.*	*Manchester.*
Shaw, Clifton Frank	A	*a.* and *s.*	*Tilton.*
Shepherd, Charles William	A	*a.* and *s.*	*Sharon, Mass.*
Sherwood, Irving Frederick	*A	*prog. a.*	*Plymouth.*
Smith, Dwight George	*A	*prog. a.*	*Nashua.*
Smith, Clara Meredith		*a.* and *s.*	*Hollis.*
Smith, Louis Hutchinson		*a.*	*White River Jct., Vt.*
Soderland, Reginald Albanus	*A	*a.* and *s.*	*Manchester.*
Spinney, Emerson Sumner		*a.* and *s.*	*Portsmouth.*
Sprague, Marion Wilhelmina		*h. e.*	*Hinsdale.*
Stalker, Argyle McMorine	A	*a.*	*Newton.*
Stanley, Walter Packard		*a.* and *s.*	*Daytona, Fla.*
Stewart, Elmer Wadsworth		*a.* and *s.*	*Hanover.*
Taft, Lorado Edson		*a.*	*Gloucester, Mass.*
Tebbetts, Percy Frederick	*N	*e. e.*	*Somersworth.*
Thomas, Michael Simon		*e. e.*	*Durham.*
Thompson, Laurence Savoy	*A	*ch. e.*	*Tilton.*
Torrey, Frederick Lincoln	A	*prog. b.*	*Quincy, Mass.*
True, John George		*e. e.*	*Kensington.*
True, Oliver Lillian		*h. e.*	*West Lebanon.*
True, Laurence Melborn	A	*a.* and *s.*	*Hampton.*
Twaddle, Arthur Eastman		*m. e.*	*Manchester.*
Varrill, Roy Merton	A	*a.* and *s.*	*Newfields.*
Vose, Milton Reynolds	A	*a.* and *s.*	*Concord.*

Name	Section of S.A.T.C.	Course	P. O. Address
Walker, Kent	A	*a.*	*Newmarket.*
Wallis, Harriet Blanche		*h. e.*	*Laconia.*
Ward, Janet		*a.* and *s.*	*Hampton.*
Ward, Osborne Carleton	A	*a.* and *s.*	*Salem, Mass.*
Weeks, Charles Adelbert	*A	*prog. b.*	*Meredith.*
Weldon, Ralph Sharples	A	*a.*	*West Concord.*
Wentworth, Dorothy Pauline		*a.* and *s.*	*Dover.*
Wentworth, Russell Adams	*A	*prog. a.*	*Salmon Falls.*
Wentworth, Russell Gerrish	*A	*prog. a.*	*Farmington.*
Whitney, Orrin Calvin	*A	*prog. a.*	*Charlestown.*
Wiggin, Gilbert Newton	A	*e. e.*	*New London.*
Wiggin, Walter Wentworth	A	*a.*	*Sanbornville.*
Woodward, Bert Arthur	*N	*m. e.*	*Andover.*
Woodward, Howard True	A	*a.*	*Berlin.*
Wooster, George Edward	A	*a.*	*Concord.*

FRESHMEN

Abbott, Joseph Richard	*A	*prog. a.*	*Rumney.*
Allen, Robert Earl	**A	*a.* and *s.*	*Ashuelot.*
Alling, Stanley Joseph		*ch. e.*	*Dorchester, Mass.*
Andrews, Clifford Thomas	*A	*a.* and *s.*	*Manchester.*
Andrews, Leslie Arthur		*a.* and *s.*	*Quincy, Mass.*
Annance, Arthur E.	*N	*prog. a.*	*Greenville, Me.*
Armstrong, Leroy Morris	*A	*prog. a.*	*Amesbury, Mass.*
Austin, Norman Harlan	*A	*a.* and *s.*	*Laconia.*
Ayer, Perley Fernando	A	*prog. b.*	*Manchester.*
Badger, Carlton Burleigh	*A	*prog. a.*	*Portsmouth.*
Bagni, Martin Dante	*A	*prog. a.*	*Haverhill, Mass.*
Bailey, Edson Martin	A	*a.* and *s.*	*Sunapee.*
Bailey, George Austin	*A	*a.* and *s.*	*Woodsville.*
Bailey, George Edwin	*A	*ch. e.*	*Portsmouth.*
Baker, Bradley Locke	*A	*prog. b.*	*Concord.*
Barker, Ruth Morton		*h. e.*	*Antrim.*
Barrett, Clarence Austin	*A	*e.*	*Portsmouth.*
Barutio, Charles Woods	*A	*a.* and *s.*	*Portsmouth.*
Batchelder, William Pickering	A	*prog. a.*	*Salem, Mass.*
Batchelder, Victor Burr	A	*prog. a.*	*Laconia.*
Beane, Fred Ellsworth	*A	*a.* and *s.*	*Laconia.*
Bean, Gladys Helen		*a.* and *s.*	*Newfields.*
Beaudoin, Victor Francis	*A	*prog. a.*	*Berlin.*
Benfield, Elvira Libby		*h. e.*	*Exeter.*
Bennett, Fred Walter		*ch. e.*	*Bradford, Mass.*
Bennett, Harry James	*A	*prog. a.*	*Winchester.*

Name	Section of S. A. T. C.	Course	P. O. Address
Benson, Grant Gage	*A	*a.*	*Derry.*
Berry, Marion Emma		*a.* and *s.*	*North Hampton.*
Biddell, Sidney Miles	*A	*a.*	*Boston, Mass.*
Bingham, Harold Clinton	*A	*a.*	*Nashua.*
Bishop, Clarence Earle		*a.* and *s.*	*Sanbornville.*
Bishop, Floyd Eugene	N	*m. e.*	*Newport.*
Blodgett, Randolph Chandler		*e. e.*	*South Sutton.*
Bond, Arthur Towle	A	*a.*	*Lisbon.*
Boothman, Marion Louise		*a.* and *s.*	*Randolph.*
Boucher, James Neil	*A	*a.*	*Groveton.*
Boutwell, Llewellyn	A	*a.*	*Concord.*
Bowker, Leo Wallace	*N	*a.* and *s.*	*Keene.*
Bradley, Harold Timothy	**A	*ch. e.*	*Manchester.*
Brennan, George Edward	*A	*a.* and *s.*	*Dover.*
Brigham, Allen Everingham	*A	*prog. a.*	*Portsmouth.*
Broadley, Frank Joseph	*A	*prog. a.*	*Salem, Mass.*
Brock, Kenneth Heath	*A	*prog. a.*	*Fitchburg.*
Broderick, Sylvester James	A	*e.*	*Exeter.*
Brooks, Lester Fordyce	*A	*prog. b.*	*Errol.*
Brown, Harold Hubley	*A	*e. e.*	*Portsmouth.*
Brown, Norman Shirley	*A	*a.* and *s.*	*Haverhill, Mass.*
Brown, Raymond Chessman	A	*e.*	*Lancaster.*
Burleigh, Donald Knowles	A	*a.* and *s.*	*Tilton.*
Burnham, John Sheldon		*a.* and *s.*	*Antrim.*
Butler, Louis Alfred Boutilletti	N	*a.* and *s.*	*Worcester, Mass.*
Buzzell, Roy Harold	*A	*prog. a.*	*Laconia.*
Byrne, Daniel John	*A	*a.* and *s.*	*Concord.*
Cahill, John Henry	*A	*prog. b.*	*Milford.*
Calcutt, George Frederick	*A	*m. e.*	*Dover.*
Callahan, Henry Paul	*A	*a.* and *s.*	*Concord.*
Callahan, John Leadens		*e.*	*Littleton.*
Came, George Hazelton		*ch. e.*	*Somersworth.*
Campbell, George Lawrence	*A	*a.*	*Medford, Mass.*
Carpenter, Herbert Stoddard	A	*a.* and *s.*	*Lancaster.*
Carrigan, Robert Emmett	*A	*a.* and *s.*	*Meredith.*
Carter, Leslie Frederick	*N		*Hillsborough.*
Cassell, Harold David	*A	*m. e.*	*Dover.*
Cassidy, Vincent Harold	*A	*prog. b.*	*Chelsea, Mass.*
Cassillo, Nicholas Richard	A	*a.* and *s.*	*Keene.*
Chabott, Jr., Eli Joseph	*A	*prog. b.*	*Keene.*
Chase, Helen Evans		*a.* and *s.*	*Smithtown.*
Chesley, Guy Kenneth	A	*ch. e.*	*Rochester.*
Clark, George Melvin	*A	*prog. a.*	*Portsmouth.*

Name	Section of S. A. T. C.	Course	P. O. Address
Clark, Jr., Walter Ellery	*N	*e.*	*Franklin.*
Clough, Fletcher Harvey	*A	*prog. a.*	*Concord.*
Coffill, George Boyson	A	*a.* and *s.*	*Manchester.*
Colcord, Howard Edward	*A	*prog. b.*	*Province Lake.*
Cole, George Wallace	*N	*m. e.*	*Salem Depot.*
Collins, George Peabody	*A	*prog. a.*	*Lakeport.*
Collins, Thomas Murray	*A	*prog. a.*	*Rochester.*
Cook, Albert Spaulding	A	*a.* and *s.*	*Fremont.*
Cooley, Roland Robert	*A	*prog. a.*	*Wilton.*
Cooper, Arthur Gunyon	A	*prog. a.*	*Exeter.*
Cooper, Franklin Barlow	*A	*prog. a.*	*Salem Depot.*
Cooper, Lewis Swett	A	*prog. a.*	*Medford, Mass.*
Corson, Sidney Wingate		*e. e.*	*Rochester.*
Coutchoucas, Constantina		*a.* and *s.*	*Manchester.*
Cox, Isaac Newton	A	*m. e.*	*Manchester.*
Cox, Paul Nelson	*A	*a.*	*Newtonville, Mass.*
Cram, Donald Blick	*N	*a.* and *s.*	*Antrim.*
Crosby, Gordon Vaughan	A	*a.* and *s.*	*Groveland, Mass.*
Crosby, William Theodore		*e. e.*	*Groveland, Mass.*
Cross, Perley Thomas	*A	*prog. a.*	*Franklin*
Crossman, Harold George	*A	*prog. a.*	*Claremont.*
Croteau, Arthur Joseph	N	*m. e.*	*Marlborough.*
Currier, Preston H.		*e. e.*	*Plymouth.*
Dame, Norman Carleton		*e. e.*	*Rochester.*
Dana, Marshall Merritt	*N	*m. e.*	*Alstead.*
Darvill, Frederick John	N	*a.* and *s.*	*South Berwick, Me.*
Davis, Beryle Lucetta		*a.* and *s.*	*Plymouth.*
Davis, Dorothy Lillian		*h. e.*	*Warner.*
Dawson, Andrew McGrouther	A	*ch. e.*	*Methuen, Mass.*
Day, Henry Willis		*a.* and *s.*	*West Kennebunk, Me.*
Dearborn, Karl Brock	*A	*prog. a.*	*Belmont.*
Demers, Louis Alfred	*A	*e. e.*	*Gossville.*
Demers, Ovilla Henry	*A	*a.* and *s.*	*Manchester.*
Derby, Francis Hunter Howe	*A	*a.*	*Dorchester, Mass.*
deRochemont, Charles Wallace	A	*e. e.*	*Portsmouth.*
Desotelle, Louis Patrick	*A	*a.* and *s.*	*Dover.*
Dickinson, Carl Norman	A	*a.* and *s.*	*Nashua.*
Dion, Wilford Arthur	*A	*prog. a.*	*Tilton.*
Dodge, James Cassins	*A	*a.* and *s.*	*Nashua.*
Donovan, Frederick David		*a.*	*Ashuelot.*
Donovan, James Francis	*A	*prog. a.*	*Exeter.*
Doolittle, Irving Warren	A	*a.* and *s.*	*Portsmouth.*
Doran, Robert Harold		*a.*	*Littleton.*

Name	Section of S. A. T. C.	Course	P. O. Address
Doyle, Decima Inez		*a.* and *s.*	*Exeter.*
Dresser, Donald Sylvester		*e. e.*	*Berlin.*
Drown, Ernest Alvin	*A	*a.* and *s.*	*Alton.*
Drown, Herbert Leon	*A	*a.* and *s.*	*Wakefield.*
Dubeau, Joseph Dewey	*A	*m. e.*	*Derry.*
Ducey, James Joseph	*A	*a.* and *s.*	*Concord.*
Duffy, Wilfred Lincoln	A	*e. e.*	*Lawrence, Mass.*
Duggans, Walter Daniels	*A	*prog. b.*	*Worcester, Mass.*
Dunn, Henry Linwood		*a.* and *s.*	*Portsmouth.*
Dutton, Shelley Earle	*A	*prog. b.*	*North Haverhill.*
Duval, Romeo Onesime	*A	*prog. a.*	*Hillsborough.*
Emerson, Lester Straw		*e. e.*	*Pittsfield.*
Eastman, Chandler	A	*a.* and *s.*	*West Concord.*
Edwards, Ellerton Hoffman	*A	*prog. b.*	*Bennington.*
Eastman, John Edgar	*A	*prog. b.*	*Hampstead.*
Emery, Mayford Ezra	*A	*prog. a.*	*Andover.*
Evans, Harold Merrill		*ch. e.*	*South Hampton.*
Fernald, Langdon Dewey	*A	*prog. a.*	*Laconia.*
Fitzpatrick, John James	*A	*ch. e.*	*Milford.*
Flanders, Robert Charles		*a.* and *s.*	*Laconia.*
Ford, Henry Robert		*e. e.*	*Derry.*
Forrest, Isaiah Lord	*A	*prog. a.*	*Silver Lake.*
Foster, Dean K.	A	*a.* and *s.*	*Concord.*
Fountain, Joseph Andrew	*A	*a.* and *s.*	*Laconia.*
Fowler, Karl Raymond	A	*a.* and *s.*	*Lebanon.*
†Francis, Elmer Merritt	**A	*e. e.*	*West Newton, Mass.*
Freeman, Everett Orvis	*A	*prog. a.*	*Boston, Mass.*
French, Ford Elmer	*A	*e.*	*North Stratford.*
French, Francis Andrew		*e. e.*	*Wilton.*
French, Will Woodbury	*A	*prog. a.*	*Tilton.*
Gadd, Rodney Elliott	*A	*prog. a.*	*West Newbury, Mass.*
Gadd, Thomas Burden		*a.*	*Plymouth.*
Gale, Shirley Irving	A	*a.* and *s.*	*Lebanon.*
Garfield, John Thurston	**A	*m. e.*	*East Jaffrey.*
Garland, Guy Stanley	*A	*prog. b.*	*Hampton.*
Garvin, Jr., John Howard	*A	*prog. a.*	*Sanbornville.*
Garvin, Josiah Dow	*A	*e. e.*	*Sanbornville.*
Gay, Paul Baxter	*A	*prog. b.*	*New London.*
Germundson, Merrill Andrew	A	*prog. a.*	*Newton.*
Gilmore, Mildred Endora		*a.* and *s.*	*Hampton.*
Gilson, Henry Earl	*N	*m. e.*	*Windham.*
Glidden, Robert Leslie	*A	*m. e.*	*Dover.*
Glover, William Freeman	*A	*prog. a.*	*Exeter.*

Name	Section of S. A. T. C.	Course	P. O. Address
Goggin, Jeremiah Francis	A	*a.* and *s.*	*Dover.*
Goodwin, Crystal Evelyn		*a.* and *s.*	*Dover.*
Goold, John Exshaw	A	*e. e.*	*Hanover.*
Gordan, William Ezra	*A	*prog. a.*	*Concord.*
Gould, Audrey Elmer	*A	*a.* and *s.*	*Littleton.*
Gould, Freda Ross		*h. e.*	*Hanover.*
Gould, Verner Charles	*N	*prog. a.*	*Manchester.*
Gove, George Carroll		*m. e.*	*Raymond.*
Griffiths, Sadie Marion		*a.* and *s.*	*Durham.*
Hallisey, Dennis Leo	*N	*e.*	*Nashua*
Hallisey, Harold Jeremiah	*A	*prog. a.*	*Nashua.*
Hamblet, Theodore Clement	A	*prog. b.*	*Lawrence.*
Hammond, Don James	*A	*prog. a.*	*Colebrook.*
Haney, John Irving	*A	*prog. a.*	*Berlin.*
Hanson, Oscar Valdemar	*A	*prog. a.*	*Concord.*
Hardy, Frank Hildreth	*A		*Lowell, Mass.*
Hardy, Harry Dudley	*A	*prog. b.*	*Nashua.*
Harris, Lester Samuel		*a.* and *s.*	*Franklin.*
Hartford, Alfred Boune	*N	*a.* and *s.*	*Lancaster.*
Harvey, Franklin Sawyer	*A	*prog. a.*	*Chichester.*
Harvey, Franklin Watson	*N	*m. e.*	*Portsmouth.*
Harvey, Lester Schley	*A	*a.* and *s.*	*Manchester.*
Hawkins, Lewis Byron	*A	*a.* and *s.*	*Manchester.*
Hayes, Carl Dewey	*A	*prog. a.*	*Wolfeboro.*
Hayes, Theodora Edith		*h. e.*	*Wolfeboro.*
Healey, Lee Gladstone	*A	*a.* and *s.*	*Manchester.*
Heartz, Harold Francis	*A	*prog. a.*	*Exeter.*
Heartz, Robert Frederick	*A	*prog. a.*	*Exeter.*
Heller, Samuel Earle	*A	*prog. a.*	*Claremont.*
Henry, Arthur Francis	*A	*prog. a.*	*Concord.*
Henry, James Phillips	*A	*a.*	*Dorchester, Mass.*
Herlihy, John Edward	*A	*prog. a.*	*Newfields.*
Herrick, Robert Smith		*a.*	*Cambridge, Mass.*
Hewitt, Vivian Eloise		*a.* and *s.*	*Durham.*
Higgins, Martha Gorham		*a.* and *s.*	*Salem Depot.*
Hill, Kenneth Francis	*A	*a.*	*Centre Strafford.*
Hilliard, John Clinton	A	*prog. a.*	*East Kingston.*
Hoben, Margaret Egan		*a.* and *s.*	*Manchester.*
Hodgdon, Jr., Orrin Chandler	*A	*a.* and *s.*	*Penacook.*
Holland, James Ralph	*A	*prog. a.*	*Portsmouth.*
Holmes, Byron Lucy	A	*a.*	*Northwood.*
Holmes, Clayton William	*A	*prog. a.*	*Manchester.*
Holmes, Robert William	A	*m. e.*	*Dover.*

Name	Section of S. A. T. C.	Course	P. O. Address
Horne, Samuel Philip		*a.* and *s.*	*Bradford, Mass.*
Horne, William James	A	*a.* and *s.*	*Rochester.*
Hulburt, Leburton Blodgett	*N		*Lexington, Mass.*
Hurd, Paul Delloss		*a.* and *s.*	*Sanford, Me.*
Hutchinson, Philip Hiram	*A	*prog. a.*	*Concord.*
Hyde, Rhoda Alettha		*h. e.*	*East Kingston.*
Ingham, Howard Vincent	A	*a.*	*Lowell, Mass.*
Irish, Robert Jasper	A	*a.* and *s.*	*Wolfeboro.*
Jackson, Harold George	*A	*prog. a.*	*Groveton.*
Jacques, Henry Joseph	*A	*prog. a.*	*Rochester.*
Jacques, Laura Gertrude		*a.* and *s.*	*Ashland.*
Jacques, Omer Charles	N	*e.*	*Ashland.*
Jameson, Ruth Agnes		*a.* and *s.*	*Cornish.*
Jeneau, Rudolph	*A	*e. e.*	*Somersworth.*
Jenne, Aldred Augustus	*A	*prog. a.*	*Haverhill, Mass.*
Johnson, Andrew Joseph	*N	*prog. a.*	*Lebanon.*
Johnson, Frederick Knowlton		*m. e.*	*Winthrop, Mass.*
Johnson, Nelson Peterson		*a.* and *s.*	*West Lebanon.*
Johnson, Newell Byron	*A	*prog. a.*	*Berlin.*
Jones, Jr., Edwin Clifford	*N	*a.* and *s.*	*Norwood, Mass.*
Jones, Frank	A	*a.* and *s.*	*New Durham.*
Jones, Maurice Avery	*A	*prog. a.*	*Concord.*
Jones, Robert Edgar	*A	*prog. a.*	*Penacook.*
Junkins, Frank Leroy	*A	*prog. a.*	*Exeter.*
Keane, Francis Aloysius	N	*m. e.*	*Manchester.*
Keefe, James Francis	*N	*ch. e.*	*North Wilbraham, Mass.*
Keenan, John Herbert	*A	*prog. a.*	*Berlin.*
Kelley, Parker Westbrook		*a.* and *s.*	*Dennisport, Mass.*
Kelsey, Dorothy Isabelle		*h. e.*	*Meriden.*
Kelsey, Howard Phelps	A	*prog. a.*	*Meriden.*
Kemp, Ralph Bradstreet	*N	*prog. a.*	*Kingston.*
Kennison, Ralph	*A	*a.* and *s.*	*Newton.*
Keyes, Charles Henry	*A	*m. e.*	*Hollis.*
Kimball, Elmer Winton	*A	*prog. a.*	*Newmarket.*
Knight, Ruth Elizabeth		*a.* and *s.*	*Exeter.*
Knowles, Charles Theodore	*N		*South Berwick, Me.*
Kurtz, Maurice		*a.* and *s.*	*Manchester.*
Lachowicz, John Stanley		*a.* and *s.*	*Middletown, Conn.*
LaCombe, Harvey Joseph	*A		*Groveton.*
Lamb, Harold George	*A		*Langdon.*
Lang, Arthur Harold	*A	*a.* and *s.*	*Newmarket.*
Lawrence, Oakes Kent		*a.*	*Tilton.*
Leach, William Arthur	A	*a.*	*Moultonborough.*

Name	Section of S. A. T. C.	Course	P. O. Address
Leath, Cecil Eldon		*e. e.*	*So. Milford, Mass.*
LeBlanc, Mederick Joseph	*A	*a.* and *s.*	*Concord.*
Leblond, George Albert	*A	*a.* and *s.*	*Rochester.*
Leonard, Janice Marjorie		*h. e.*	*Worcester, Mass.*
LeVangie, Eugene David	*A		*Newfields.*
Leveroni, Jr., Lawrence Paul	N	*a.* and *s.*	*Keene.*
Lord, Augustus H.	*A		*Dover.*
Lougee, Floyd Harold	**A	*a.* and *s.*	*Laconia.*
Lyster, Paul Jones	A	*a.*	*Littleton.*
McDonagh, Margaret Pauline		*a.*	*Concord, Mass.*
MacDonald, John Henry	*A		*Bethlehem.*
MacDonald, Ray Ellsworth	A	*m. e.*	*Manchester.*
McCann, Patrick Edward	*A	*a.* and *s.*	*Concord.*
McCarthy, Daniel Harold	*A	*a.* and *s.*	*Dover.*
McDuffee, John		*a.* and *s.*	*Rochester.*
McGee, Irving J.	*A		*Berlin.*
McGoff, Marjorie Ida		*a.* and *s.*	*Concord.*
McKay, John Cameron	*A	*m. e.*	*Nashua.*
McKeen, Donald Sidney	*N	*normal*	*East Kingston.*
McKerley, Stillman Ernest	A	*a.* and *s.*	*Gerrish.*
MacLatchey, Gordon Francis		*m. e.*	*Sunapee.*
McNeil, Clarence William	A	*ch. e.*	*Lebanon.*
McNulty, Elizabeth Mary		*a.* and *s.*	*Manchester.*
Macfarlane, Katherine		*a.* and *s.*	*Durham.*
Maine, Percy Ray	*A	*m. e.*	*Haverhill, Mass.*
Mansell, Maurice Ames	A	*a.*	*Old Town, Me.*
March, Elwin Allerson	*A	*a.*	*Nashua.*
Marsh, George Henry Clay	A	*a.* and *s.*	*Nashua.*
Marsh, Murray Bryan	*A		*Canaan, Vt.*
Marsh, Robert French		*ch. e.*	*Manchester.*
Marshall, Leonard Joseph		*m. e.*	*Salem Depot.*
Marshall, Nathalie Emerson		*h. e.*	*Henniker.*
Marston, Lester Woodbury	*N	*a.* and *s.*	*Dover.*
Martin, Adams		*e. e.*	*Pembroke.*
Matthews, Frank Moses	*N	*e.*	*Cape Neddick, Me.*
May, William George		*a.* and *s.*	*So. Deerfield, Mass.*
Meader, Carleton Eugene	*A	*a.* and *s.*	*Rochester.*
Meader, Jr., Walter Sidney	A	*e. e.*	*Dover.*
Merrill, Forest Winn	*A	*a.*	*Lowell, Mass.*
Merrill, Glen Wesley	**A	*normal*	*Norwich, Vt.*
Meserve, Howard Haley	*A	*a.*	*Framingham, Mass.*
Messenger, Herbert Dickinson		*a.*	*East Boston, Mass.*
Mooney, Harry Justin	*A		*Laconia.*

Name	Section of S. A. T. C.	Course	P. O. Address
Moore, Ralph Henry	*A		*Laconia.*
Morgan, Ralph Allen	*A	*e. e.*	*Lebanon.*
Moriarty, James Joseph	A	*a.*	*Fitchburg, Mass.*
Morin, Paul Emile	*A	*normal*	*Berlin.*
Morrison, Clifton Cole		*m. e.*	*Ashland.*
Morse, Cedric Earle	*A	*a.* and *s.*	*Haverhill, Mass.*
Munro, Leo Franklin	A	*m. e.*	*Groveton.*
Nelson, Charles William	A	*ch. e.*	*West Thornton.*
Neville, Mark Anthony	*N	*a.* and *s.*	*Portsmouth.*
Nichols, George Edwin	N	*ch. e.*	*Hopedale, Mass.*
Northey, Roscoe Lee	A	*a.* and *s.*	*Lisbon.*
Noyes, Chester Drew	*A	*normal*	*Colebrook.*
Noyes, George Allen	*A		*Colebrook.*
Noyes, Roland Isaac	*A	*a.* and *s.*	*Hampton.*
Nute, Norwood		*e. e.*	*Exeter.*
Nutter, Robert Peary	A	*a.*	*South Portland, Me.*
O'Leary, Michael Francis	A	*a.* and *s.*	*Portsmouth.*
Olsson, Gunnar Bror		*a.*	*Chichester.*
O'Neil, William Joseph	*A	*e.*	*East Pepperell, Mass.*
Osgood, Harold Keene	**A	*a.* and *s.*	*Haverhill, Mass.*
Osgood, Paul S.	A	*a.* and *s.*	*Rochester.*
Paine, Lorin Dresser		*a.* and *s.*	*Berlin.*
Paquet, Edward Joseph	*N	*m. e.*	*Derry.*
Paquet, Raphael Arthur	*A		*Peterborough.*
Parshley, Richmond Hobson	*A	*a.* and *s.*	*Rochester.*
Parsons, Warren Clough	*A	*a.* and *s.*	*Rochester.*
Partington, Clyde Nash		*a.*	*Dover.*
Pease, Percy Elmer	*N	*a.* and *s.*	*Laconia.*
Pelissier, Adelard Rudolph	*A	*e. e.*	*Pittsfield.*
Penwell, Kenneth Clayton	*A	*a.* and *s.*	*Haverhill, Mass.*
Perkins, Harold Linscott	*A		*Exeter.*
Perley, Ronald Prime	*A		*Rowley, Mass.*
Perry, Laurence Bernard	*A		*Portsmouth.*
Pettingill, Helen Mary		*a.* and *s.*	*Salisbury, Mass.*
Pike, Randolph Kelley	*A	*a.*	*Laconia.*
Piper, Richard Young	*A	*e. e.*	*Stratham.*
Platt, Charles Grandison	*A	*normal*	*Stratford.*
Plummer, Robert Nathan	*N	*a.*	*Derry.*
Plummer, Raymond Swain	A	*m. e.*	*Laconia.*
Pothier, Raymond Adolphe	**A	*m. e.*	*Haverhill, Mass.*
Potter, Lynn Emery		*a.* and *s.*	*Lebanon.*
Preo, Richard Lionel	*A	*normal*	*Berlin.*
Prince, Arthur Stanley	*A		*Salisbury.*

Name	Section of S. A. T. C.	Course	P. O. Address
Proctor, Ralph Harwood		*a.* and *s.*	*Antrim.*
Pulsifer, Benjamin Franklin	*A	*prog. b.*	*Lewiston, Me.*
Putnam, Dorothy Alice		*a.* and *s.*	*Greenfield.*
Quimby, Lawton Buzzell		*a.*	*Laconia.*
Quirk, John Ignatuis	*A		*Portsmouth.*
Randlett, Norman Prescott	A	*a.* and *s.*	*Laconia.*
Ready, Joseph Francis	*A	*a.*	*Manchester.*
Reardon, Edward Dennis	**A	*m. e.*	*Concord.*
Reardon, Honora Agnes		*ch. e.*	*Concord.*
Renehan, Donald Edwin		*a.* and *s.*	*White River Jct., Vt.*
Rice, Andrew Carl	A	*ch. e.*	*Wilbraham, Mass.*
Rice, Neal James		*a.*	*Contoocook.*
Rider, Edward Alvin	*A	*a.*	*Laconia.*
Roach, William Patrick	*A	*a.*	*Berlin.*
Roberge, Benjamin Grandiose	*A	*a.*	*Somersworth.*
Robie, Edison Frank	*A	*prog. a.*	*Derry.*
Robinson, George	*A	*prog. a.*	*Suncook.*
Robinson, John McDonald	*A	*prog. b.*	*Haverhill.*
Rodenhiser, Herman Alonzo	*A	*m. e.*	*Henniker.*
Rolston, Frank Gordon	*A	*prog. a.*	*Greenland.*
Rose, George Clark	*A	*prog. a.*	*Suncook.*
Rossell, Joseph Frederick		*a.* and *s.*	*West Concord.*
Rowden, Henry Thomas	*A	*a.* and *s.*	*Woodsville.*
Rowe, Stacy Buzzel	*A	*prog. a.*	*Newton.*
Rowe, Walter Stuart	*A	*prog. b.*	*Derry.*
Rowell, Richard Irving	A	*m. e.*	*Newport.*
Rumazza, Edward Frederick	A	*e. e.*	*Rochester.*
Russell, Bruce Eldridge,		*a.*	*Mont Vernon.*
Russell, Jr., Charles Clifton	A	*e. e.*	*Exeter.*
Russell, Clarence Rufus	A	*a.* and *s.*	*Exeter.*
Russell, Jr., Fred Cutler		*a.* and *s.*	*Haverhill.*
Russell, Leonard Everett	*A	*a.*	*Danvers, Mass.*
Sager, Ronald Frederick	*A	*prog. a.*	*Salem, Mass.*
Sanders, Ernest Frank	*N	*prog. a.*	*Dover.*
Sanguinet, George Alphonse	*A	*a.* and *s.*	*Worcester, Mass.*
Sargent, Katherine Morse		*a.* and *s.*	*Exeter.*
Saunders, Arthur Bruce	A	*ch. e.*	*Nashua.*
Saunders, Charles	*N	*normal*	*Keene.*
Savage, Thomas Walter	*A	*e.*	*Bristol.*
Sautelle, Elanor Prescott		*a.* and *s.*	*Manchester.*
Sawyer, Robert Cushman	A	*a.* and *s.*	*Concord.*
Scott, Elmer Arthur	A	*ch. e.*	*East Wakefield.*
Seavey, Ervin Gustavus	*A	*prog. a.*	*Portsmouth.*

Name	Section of S. A. T. C.	Course	P. O. Address
Seymour, Joseph Wilfred	*A	*a.* and *s.*	*Laconia.*
Shapiro, Maurice David		*e. e.*	*Portsmouth.*
Shea, Theresa		*a.* and *s.*	*Nashua.*
Shea, Thomas Edward	*A	*a.* and *s.*	*Nashua.*
Shute, Charles Elmer	*A	*prog. a.*	*West Newbury, Mass.*
Simonds, Stephen Moses	A	*a.* and *s.*	*Lisbon.*
Slight, William Henry		*a.* and *s.*	*Haverhill.*
Smart, Earl Thompson	*A	*prog. a.*	*Portsmouth.*
Smith, Charles Wesley	A	*e. e.*	*Portsmouth.*
Smith, Roland Alvin	*A		*Pittsfield.*
Smyrl, Elvin Leslie	*A	*prog. a.*	*Manchester.*
Snow, Ernest Luther	*A	*prog. a.*	*Walpole.*
Snow, Howard King	*A	*prog. a.*	*Lancaster.*
Snyder, Edward Charles	*A		*Lisbon.*
Spain, Joseph Stephen	*A	*a.* and *s.*	*Concord.*
Spaulding, Albert Edward	*A	*e.*	*Bradford, Mass.*
Spinney, Fannie Mae		*a.* and *s.*	*Dover.*
Sprague, M. Gertrude		*h. e.*	*Hinsdale.*
Stanley, Stillman Gay	A	*m. e.*	*New London.*
Staples, Harold Sanborn	*N	*a.* and *s.*	*Dixfield, Me.*
Stearns, Frank Leslie	*A	*e. e.*	*Manchester.*
Stearns, William Lowell	*N	*m. e.*	*New London, Conn.*
Stevens, Hope		*a.* and *s.*	*Exeter.*
Stevens, William Arthur	*A	*prog. a.*	*Concord.*
Stewart, Arthur Porter	*A	*e.*	*Hanover.*
Stewart, Robert	*N	*normal*	*Danbury.*
Stickney, Irving Edwin	*A		*Hampton.*
Stimson, Erville Rupert	*A	*e. e.*	*Woodsville.*
Stimson, Kirk Keith	*N	*normal*	*Milford.*
Storey, Edward Jerome		*e. e.*	*Sanbornville.*
Stratton, William Merrill	A	*a.* and *s.*	*Manchester.*
Strong, Carlton Matthew	N	*e. e.*	*Concord.*
Swain, Charles Andrew	A	*a.* and *s.*	*Nashua.*
Swasey, Mildred Hadda		*h. e.*	*Exeter.*
Taylor, Millard Renshaw		*ch. e.*	*Dover.*
Thayer, Royal Goodell		*a.*	*St. Albans, Vt.*
Thibaudeau, Philippe Arthur	*A	*prog. a.*	*Manchester.*
Thompson, Donald Tuttle		*a.* and *s.*	*East Andover.*
Thompson, Katherine		*a.* and *s.*	*East Andover.*
Tilton, Paul Josiah	*A	*prog. a.*	*Raymond.*
Tingley, Edythe May		*a.* and *s.*	*Durham.*
Tirrell, Philip Mason	*A	*prog. a.*	*South Lyndeborough.*
Toner, John Walter Meegan	A	*e. e.*	*Portsmouth.*

Name	Section of S. A. T. C.	Course	P. O. Address
Towle, Clayton Woodbury	A	*ch. e.*	*Conway.*
Towle, Joseph Henry	*A	*prog. a.*	*Conway.*
Towle, William James	*A	*prog. a.*	*Lebanon.*
Tripp, Harold James	*A	*e. e.*	*Epsom.*
True, Jr., George Lewis		*a.* and *s.*	*Freeport, Me.*
Tupper, Harold Fisk	A	*m. e.*	*Nashua.*
Turner, Howard Edmundson		*e. e.*	*Salem.*
Upham, Earle Murray	*A	*ch. e.*	*Salem, Mass.*
Wadleigh, Wilford Roys	*A	*prog. a.*	*Claremont.*
Wakefield, Robert Grosse	*A	*normal*	*Plymouth.*
Walch, Myron Swallow	*A	*prog. b.*	*Hollis.*
Ward, Arthur Thomas	*A	*prog. a.*	*Nashua.*
†Ward, Everett Gilman	*A	*e. e.*	*Laconia.*
Warner, Norwood Allen		*m. e.*	*South Yarmouth, Mass.*
Watkins, Robert Ellbridge		*e. e.*	*Reed's Ferry.*
Weeks, Chester Russell	*A	*m. e.*	*Pittsfield.*
Weston, Gail Berry	**A	*normal*	*Derry.*
Weston, George Washington	A	*a.*	*Wilton.*
Weston, John Prentiss	A	*a.*	*Bennington.*
Wheeler, Stephen Morse	*A	*a.* and *s.*	*Atkinson.*
White, Charles Curtis	*A		*Haverhill, Mass.*
Whittier, Helen		*a.* and *s.*	*Gossville.*
Whittimore, Salon Dolloff	*A	*m. e.*	*Hanover.*
Wiegand, Albert John		*a.* and *s.*	*Great Fall, Mont.*
Wiggin, Ernest Rankin	*A	*prog. b.*	*North Berwick, Me.*
Wiggin, Russell Morrison	A		*Whitefield.*
Willey, George Nute	*A	*e.*	*Newmarket.*
Williamson, Ernest Barrett	*A	*prog. a.*	*Brookline, Mass.*
Wilson, Carl Carty	*A	*prog. a.*	*Portsmouth.*
Wingate, Carleton Norman	*A	*prog. a.*	*Rochester.*
Winslow, George Washington	*N	*e.*	*Dover.*
Wood, Ethel Evelyn		*h. e.*	*Bath.*
Wood, Harold Barnette	A	*e. e.*	*Portsmouth.*
Yeaton, Conrad Dewey	*A	*prog. a.*	*East Pepperell, Mass.*
Yeaton, George Samuel		*m. e.*	*Short Falls.*
Young, Alvin Eugene	*A	*prog. a.*	*Winchester.*
Young, Esther Hale		*a.* and *s.*	*Dover.*
Young, Hamblet Waterman	*A	*prog. a.*	*Manchester.*
Yuskauskas, Joseph John		*e. e.*	*New Haven, Conn.*

†Deceased.

TWO-YEAR AGRICULTURAL MEN

Second Year

Name	Section of S. A. T. C.	Course	P. O. Address
Ajemian, Souren Seghpos		*a. h.* and *d.*	*Portsmouth.*
Evans, Paul Blodgett	A	*a.*	*Nashua.*
Grimes, Freeman Mark	A	*a.*	*West Medford, Mass.*
Main, Arthur Roscoe		*a. h.* and *d.*	*Melrose Highl'ds, Mass.*
Northrup, Harley Frederick		*a. h.* and *d.*	*Williamstown, Mass.*

First Year

Barker, Carl Warren	A	*a.*	*Stratham.*
Bauer, Monroe		*a.*	*Flatbush, N. Y.*
Batchelder, Phillip		*a.* and *s.*	*Durham.*
Cleveland, Hollis Hove	A	*a.*	*Peterborough.*
Dailey, James Dewey		*a.*	*Madbury.*
Dexter, Douglas Hibbard	A	*a.*	*Lisbon.*
Gussman, Ralph		*a.*	*Roxbury, Mass.*
Hartwell, Reginald Warner		*a. h.* and *d.*	*Laconia.*
Rowe, George Joseph		*a.*	*North Charlestown*
Silver, Joseph Clarence	A	*a.*	*New Ipswich.*

SPECIAL STUDENTS

Sleeper, Lora Ella	*h. e.*	*Concord.*
Stevens, Clark Leavitt	*drawing*	*Colebrook.*
Tyler, Olive Mary	*h. e.*	*Worcester, Mass.*
Wallace, Kathleen Nesbitt	*a.* and *s.*	*Wolfeboro.*

SUMMARY OF REGISTRATION, 1917–1918

COMPARED WITH REGISTRATION FIGURES FOR PREVIOUS YEAR

	Army*	Agriculture												Arts and Science								Engineering								Men**		Women**		Total**	
		Reg.		Gen.		A.H.&D.		For.		Hort.		Total		Gen.		H.E.		M.A.T.		Total		Ch.E.		E.E.		M.E.		Total							
		'17 '18	'18 '19	'17 '18	'18 '19	'17 '18	'18 '19	'17 '18	'18 '19	'17 '18	'18 '19	'17 '18	'18 '19	'17 '18	'18 '19	'17 '18	'18 '19	'17 '18	'18 '19	'17 '18	'18 '19	'17 '18	'18 '19	'17 '18	'18 '19	'17 '18	'18 '19	'17 '18	'18 '19	'17 '18	'18 '19	'17 '18	'18 '19	'17 '18	'18 '19
Seniors	.....	...	...	6	3	10	6	2	1	5	...	23	10	24	26	9	18	....	2	33	46	7	4	4	1	2	5	13	10	49	33	20	33	69	66
Juniors	3	...	...	3	1	6	11	1	2	3	...	13	14	27	41	19	16	1	3	47	60	10	10	4	8	3	7	17	25	42	57	35	42	77	99
Sophomores	13	24	34	...	...	...	...	...	...	...	...	24	34	58	66	15	14	2	1	75	81	12	11	17	17	8	11	37	39	93	107	43	47	136	154
Freshmen	182	48	26	...	...	...	...	...	...	...	...	48	26	94	136	21	12	2	....	117	148	21	21	33	39	19	36	73	96	178	227	60	43	238	270
Total, 4-yr. students	198	72	60	9	4	16	17	3	3	8	...	108	84	203	269	64	60	5	6	272	335	50	46	58	65	32	59	140	170	362	424	158	165	520	589
2d-yr. Two Year	.....	8	5	...	...	...	...	...	...	...	...	8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	8	5	...	...	8	5
1st-yr. Two Year	.....	24	9	...	...	...	...	...	...	...	...	24	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	24	9	...	...	24	9
Graduates	.....	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...	1	...	1	...	2	...
Specials	.....	2	...	...	...	...	...	...	...	...	...	2	...	5	1	...	2	...	...	5	3	...	...	1	...	...	...	...	1	4	1	4	3	8	4
Total, others	.....	34	14	...	...	...	...	...	...	...	...	34	14	7	1	...	2	...	...	7	3	...	...	1	...	...	...	...	1	37	15	5	3	42	18
Total, all students Regular courses		106	74	9	4	16	17	3	3	8	...	142	98	210	270	64	62	5	6	279	338	50	46	59	65	32	59	141	171	399	439	163	168	562	607
Sec. B (S. A. T. C.)																																			
Auto truck	308	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Concrete	197	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Carpentry	339	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Electrical	206	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Blacksmith	50	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Machinist	87	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Gas Engine	42	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Drafting	7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Cooks & Bakers	17	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Clerks	16	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Total, "B"	1,269	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

SUMMARY, 1918–1919

Number students registered in Regular College courses	607
Number students registered in Special Military Programs—Sec. A	198
Number students registered in Special Military Programs—Sec. B	1,269
Total number of students trained at New Hampshire College, 1918–19	2,074

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